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OF THE

# UNIVERSAL MEDICAL SCIENCES

A YEARLY REPORT OF THE PROGRESS OF THE GENERAL  
SANITARY SCIENCES THROUGHOUT THE WORLD.

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## DISEASES OF THE SKIN.

BY ARTHUR VAN HARLINGEN, M.D.,

PHILADELPHIA.

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*A Peculiar Vascular Reaction of the Skin.*—Winternitz <sup>84</sup><sub>Aug. 16</sub> says that if a blunt instrument is drawn along the skin with moderate pressure, preferably on the chest in front, the muscular structures are seen to contract, the hair-follicles and skin-glands appear in the trace of pressure, while the color of the skin grows paler or remains unchanged. Soon the mechanical trace shows a marked injection of red color, remaining circumscribed or spreading beyond the line of pressure. These appearances may follow immediately upon pressure or may be delayed several minutes, and, after lasting a short time, gradually disappear.

One of these reactions is worthy of note. In some instances a light drawing and pressure of a blunt object on the skin is followed by a momentary anæmic trace. After a few moments, this anæmic line becomes raised above the surface of the skin, like an œdematous tumor or a linear urticarial quaddel. On each side of the white line appears at first a deep-red injective border, which spreads like a drop of fluid on a piece of absorptive paper. This reaction may last half an hour, and is known as “auto-graphism.”

In some cases of the condition observed by Winternitz, this red coloration became gradually darker and began to show on this dark background cinnabar-red patches. A similar appearance is noted at times in frost-bite and such conditions. Here the blood stagnates and the skin becomes deep red or even cyanotic, while covered with minute cinnabar-red patches.

When such patches are rubbed or stroked, the cinnabar-red lesions gradually merge into the purplish color around, to appear again a short time after the massage has been stopped. This condition can be produced artificially, as pointed out by Auspitz some

years ago. Occasionally massage in these latter cases produces white patches, which then slowly change back to purple again.

This curious cinnabar color resembles, in many respects, the color of a blood-corpuscle exposed to the air, and its origin is probably similar.

There are in the most superficial blood-capillaries stagnant red corpuscles which give out carbonic acid and take up oxygen, thus respiring and becoming arterialized through the skin. This observation is a proof of respiration through the skin.

*Insensible Perspiration of the Skin.*—Unna, <sup>22</sup><sub>June 25</sub> says that covering materials not of themselves absorbable have one result in common,—that of affecting the communication of the skin with the external air, and especially perspiration and secretion. He finds that when the skin is covered with a layer of fat, perspiration is diminished, and by lanolin more than by the glycerin fats, notwithstanding the miscibility of lanolin with water. Glycerin also prevents evaporation from the skin, as does vaselin.

Gelatin acts in the opposite way, a thin covering increasing the perspiration through the skin. This explains why a body covered with glue is always cold. India rubber and gutta-percha diminish perspiration, while collodion increases it. Both gelatin and collodion contract on drying, but, as this contraction is hindered when they are spread upon the skin, they probably become porous. The strong resistance of fats to perspiration, and the varying amounts found on the skin in different parts and among different persons, account for discrepancies in the results obtained by investigations into the cutaneous transpiration. The purely physical process of insensible perspiration and the physiological process of sweating are not different stages of the same process, but are quite distinct.

The practical result of Unna's investigations is, that, as inunction of fats causes the retention of body-heat and drives large quantities of fluid to the kidneys, while the removal of fat diminishes body-heat and prevents loading of the kidneys, the fat of the skin should be removed as far as possible in cases of renal inflammation, and the body coated with gelatin in order to reduce the fever, in the first place, and to relieve the kidney, in the second.

*The Study of the Cutaneous Secretions.*—Arnozan <sup>188</sup><sub>July 13</sub> suggests an ingenious method of ascertaining the presence of fat in

the skin. It is known that small fragments of camphor placed upon the surface of pure water assume a condition of rapid rotation, which, however, abruptly ceases if a drop of oil is thrown upon the water, or even a needle, previously rubbed with oil, is dipped in it. This delicate reaction is made use of by Arnozan, who touches the water with a glass rod previously rubbed on the skin. He finds that the scalp, face, back, and the front of the chest are always covered with oil. The front of the neck, the axillæ, the lower abdomen, the pubis, and the limbs are not oily. Children are less oily than adults.

*The Cause of the White Color of the Human Skin.*—Kromayer<sup>69</sup><sub>June 19</sub> says that the absence of pigment is usually given as the reason of the white color of our skins, but this is not satisfactory. The cause of difference between the red lip and the whiteness of the adjoining skin was not accounted for until Unna suggested that the epidermis of the lip possesses no stratum granulosum, which, in the entire external skin, forms the outermost layer of the rete. The nuclei of the stratum granulosum, which have given the name to this layer, are highly refractive to light. For this reason the skin looks white wherever this layer exists. Where it is wanting, the red blood-vessels shine through.

This theory, however, is not borne out by facts. In the first place, the nuclei of the stratum granulosum are not refractive to light, as can be demonstrated. In the second place, pointed condyloma and vascular nævi, both of which are red, contain a layer of the stratum granulosum on their surface.

The epidermis is transparent, and when the papillary bodies are more or less free from blood, which is usually the case, the skin is white. The tone of whiteness or yellowness of the skin depends slightly upon pigments, but more on the color of the subcutaneous fat, which in health is white, but in ill health more yellow.

*Pigmentation of the Skin.*—Kaposi,<sup>31</sup><sub>Aug. 21</sub> in a paper before the Tenth International Congress, considering the clinical and pathological aspect of pigmentation in the skin, asks: 1. Is the pigment formed where found, or does it come from the red blood-corpuscles? 2. In the latter case, how does it reach the rete? 3. What causes the disappearance of pigment?

It has been asserted that the formation of pigment is con-

nected with the exit of red blood-corpuscles at points where hyperæmia has been excited by the solar rays, by pressure, or by some pathological process. However, this deposit only takes place when the papillæ and rete are normal. How can we account for the fact that a blister produced by cantharides leaves an indelible pigmentation, while one caused by corrosive sublimate removes pigment? Nerve influence should certainly here play a part. Besides this, there is no reason why the living protoplasm of the cells of the rete should not produce pigment on its own account. Do we not observe Albinos, whose blood contains the same hæmoglobin as that of other persons, deprived of cutaneous pigment?

When the living protoplasm loses its vital property of preserving the pigment elements amid all the nutritive changes, we have vitiligo. The red blood-corpuscles and the nervous system are both concerned in pigmentation, and there are other possible sources of pigment.

Ehrmann says that in amphibie this pigment is in the derma, while in man it is chiefly in the epidermis, but it is contained in the connective tissue and not in the leucocytes. There are two kinds of pigment, one amorphous in the cells, the other (hæmatoidin) in the meshes of the tissues. Organisms which contain no vessels are lacking in pigment; it does not exist in embryos before the formation of blood-vessels. It is the organic cells which elaborate the material furnished by the blood and make it into pigment.

Jarisch says that the distribution of cutaneous pigment is in some respects peculiar. It occupies the interpapillary spaces, and not the summits of the papillæ. In leucocythæmia Jarisch has observed a cellular proliferation in the chorion about the vascular net-work of the papillæ and subpapillary region. The pigment of the scalp, which is situated in the papilla, has nothing to do with the coloring matter of the blood.

*The Sensation of Itching.*—Bronson,<sup>59</sup><sub>Oct. 18</sub> in a paper read before the American Dermatological Association, September 2, 1890, says that there is a sense of contact independent of the special perceptive sense that belongs to the skin, commonly called "touch," but which Bronson calls "pselaphesia" (ψηλάφησις, a groping). This sense of contact is the sense disturbed in pruritus. It concerns, primarily, simple cutaneous nerves or nerve-endings situated super-

ficially and probably in the epidermis. The disturbance in pruritus is of the nature of a *dysthæsia* due to accumulated or obstructed nerve excitation, with imperfect conduction of the generated force into correlated forms of nervous energy. Scratching relieves itching by directing the excitation into freer channels of sensation, sometimes, especially when severe, substituting for the pruritus either painful or voluptuous sensations. The voluptuous sensations which may attend pruritus are a manifestation of a generalized aphrodisiac sense, representing a phase of common sensation that has its source in the sense of contact.

*Cutis Pendula*.—Seifert<sup>3</sup><sub>Apr.13</sub> gives the case of a man of 19 whose skin was dry but soft to the touch and pliable at will. The case was like that of Kopp, described in 1888. In a fragment of skin excised from the thorax in the neighborhood of the second rib, Seifert found the elastic fibres quite normal, but the tissue of the derma, on the contrary, transformed into a homogeneous myxomatous mass, deprived of the fibrous fascia, which, in the normal skin, resist the excessive elongation of the elastic fibres. It can be understood that under these circumstances the skin acts as a simple, dead, elastic membrane.

*Pemphigus in a Child—Fatal Case*.—Leudon<sup>1000</sup> gives the case of a little girl of 5, who, after an attack of “native pox,” showed an eruption consisting of blebs distributed in groups. The upper group, over the face, neck, chest, back, and axillæ, comprised numerous tense bullæ, the size of a pea, with crusts and stains. The lower group occupied the front of the abdomen, the pudenda, and upper part of the thighs. It embraced small, reddish papules, the first stage of the lesions; other papules a little further advanced, with a bleb on its summit the size of a pin’s head, and fully-developed blebs of various sizes up to half an inch, some tense, some flaccid, some umbilicated and drying, with a ring of inflammation about their border, excoriations, crusts, and stains. Some scattered blebs were observed, but none on the palms or soles. There was a good deal of irritation, and the child rubbed herself and aggravated her condition. At night-time the temperature rose to 102° or 103° F. (38.9° or 39.5° C.). Arsenic was administered: Fowler’s sol.,  $\text{m ii-viiss}$  (0.13 to 0.5 gramme) t. i. d., under which the disease disappeared. A curious point about the appearance of the eruption was the formation of secondary bullæ

like satellites around a primary lesion, which finally coalesced with the latter. The course of the disease was marked by relapses, but she was finally discharged from the hospital cured.

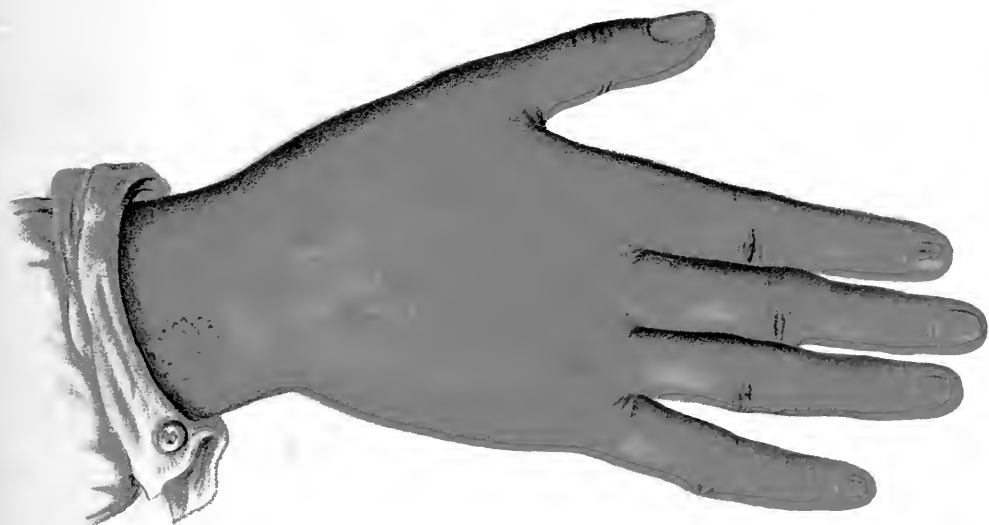
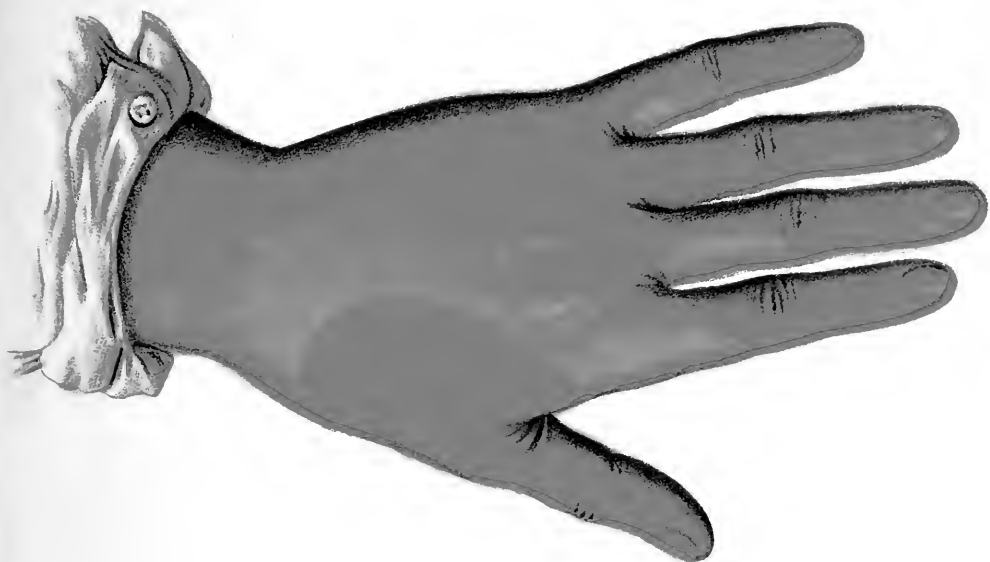
About a year later the little patient again came under treatment with a worse relapse than ever, nearly the entire surface being covered and large patches of excoriation existing. The temperature was from 99° to 102° F. (37.2° to 38.9°C.). The child suffered from diarrhœa and died finally of exhaustion.

This curious case resembles somewhat the "varicella prurigo" of Hutchinson and also some cases of Duhring's "dermatitis herpetiformis." It also bears resemblance to certain cases of erythema multiforme. The group to which it belongs is certainly worth extended study. Unfortunately, this case throws little light on the matter.

*Dermatitis Medicamentosa.*—Pye-Smith<sup>2</sup><sub>Mar. 8</sub> prescribed *chloral-amide* in full dose (40 grains—2.59 grammes—at 8 P.M., and 40 grains—2.59 grammes—at midnight) to a man of 40 suffering from aneurism. Soon after, inflammation appeared on the face, with coryza, stomatitis, and raised temperature. The skin affection rapidly spread over the whole body, the urine was scanty and slightly albuminous, and pyrexia continued for a week. Profuse desquamation followed, resembling that of exfoliative dermatitis, and the skin finally resumed its normal appearance.

Goldenberg<sup>1</sup><sub>Dec. 14, '89</sub> gave 2 drachms (7.78 grammes) of *rhubarb* to a patient in the evening. The next morning he awoke with a burning sensation in his face, and he noticed on both cheeks an eruption consisting of small, hard blisters, 'pea-sized, of "tubero-pustular" character, surrounded by a red, inflamed area. When seen by Goldenberg the next morning, almost the entire face was covered with thick, yellowish crusts, beneath which there was an accumulation of pus. The eruption was similar to one which had occurred on the same patient before on taking rhubarb,—pustules on an inflamed base, with a tendency to bleed on the removal of the crusts. The same eruption appeared about the hands. The lesions faded in a few days, and the ulcers rapidly healed after the rhubarb had been given up.

Schotten,<sup>116</sup><sub>Apr.</sub> referring to a previous paper on *sulphonal* eruptions,<sup>116</sup><sub>Dec., '89</sub> adds a new case. A woman of 66 took a 1-gramme (15½ grains) pastille of *sulphonal* in the evening. By next morning



Eruption caused by Chloral (Hutchinson)  
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an eruption had appeared nearly covering both thighs, accompanied by heat, but no other symptoms. Examination the following afternoon showed no general symptoms. Both thighs were covered by a scarlatiniform eruption of punctiform red patches, massed together. No elevations, papules, etc. The red color disappeared with difficulty under pressure. The eruption lasted some three or four days, then gradually faded away.

Levin<sup>336</sup><sub>May</sub>,<sup>26</sup><sub>July</sub> gives, as the result of experience and research, that *petroleum* itself does not produce eruption of the skin unless mingled with refuse, by-products, etc. The eruption is acneiform, with comedones.

At the recent International Medical Congress, Unna<sup>697</sup><sub>Sept.</sub> introduced the following questions: 1. Are the diffuse, spreading, erythematous and vesicular eruptions following the circumscribed local application of certain drugs (*iodoform*, *sublimate*, etc.) to be placed in the same category as the general eruptions following the internal use of the drugs? 2. Are the iodine and bromine acneiform eruptions to be regarded as due to the excretion of these drugs through the sebaceous glands? 3. Are the "dynamical" indirectly produced eruptions (Behrend) to be grouped with the directly produced specific exanthemas?

Colcott Fox, analyzing recorded cases of iodoform eruptions and comparing them with similar eruptions arising from the external application of sublimate and other mercurial preparations, arnica, chrysarobin, belladonna, etc., proposes the following classification:—

Group I. Localized eruptions due to local contact without systemic reaction.

Group II. Localized eruptions less strictly limited to the site of application of the drug: (*a*) distributed over a limited zone, (*b*) spreading indefinitely like water in blotting-paper.

Group III. Generalized eruptions, with or without systemic reaction.

Fox believes the eruptions of Group I to be of non-specific origin, purely local, and due to the irritant action of the agent. Those of Groups II and III are partly of the same nature and partly due to a specific action of the drug. In the more limited eruptions around or spreading from the site of application of the drug, the peripheral nerve-ganglia and, in the generalized erup-

tions, the more central ganglia, are affected. The generalized eruptions, therefore, are of similar causation to those arising from the ingestion of drugs.

Brooke, of Manchester, says there must be some means of accounting for the curious way in which the angio-neurotic eruptions, produced by so many drugs, are limited to so small a number of exanthems. Idiosyncrasy here plays the chief rôle.

Behrend explained this by the action of certain substances which he supposed were created by the working of the drugs in the body, and which produced these eruptions by a "dynamic" action, different drugs giving rise to different toxines in different individuals.

Brooke says another explanation is possible. Putting aside the purely inflammatory conditions and new growths, the great majority of the eruptions are angio-neurotic. To understand their mechanism, a comparison may be made with the action of drugs upon the heart. Some drugs, as digitalis, have an almost constant effect on the heart; others, as nicotine, have a less marked and selective action; others have an action so slight and uncertain as to be unpredictable. We have thus a descending series, from those which are specific to those which are purely cases of idiosyncrasy.

Transferring this comparison to the skin, we have amyl nitrite, which has a well-defined connection with the vasomotor centre of the face. In the second class we have belladonna, stramonium, and hyoseyamus; in the third class, which makes up the bulk of the angio-neurotic drug eruptions, the effect varies with every individual,—for example, the eruptions caused by quinine, chloral, and antipyrin. The eruptions produced are common or rare, universal or circumscribed, intense or weak, depending upon the sensitiveness of that particular portion of the nervous system which is easily affected by particular drugs, and which exists in the majority of the people, or upon the existence of a peculiarity only to be found in a few. There seems, therefore, to be no clearly-defined differences between Behrend's two groups.

The combined influence of the cutaneous, vascular system and its nervous supply can only produce hyperæmia. The other variations are produced by the idiosyncratic peculiarities of the various tissues of the skin in which they lie. Thus, a simple *erythematous* eruption becomes *vesicular* or *bullar* when the resistance of

the epithelium is very slight; when a spastic element concurs, it becomes *papular* or *urticarial*; when a passive venous condition supervenes, we have *purpuric* rashes or *œdema*.

This explanation renders unnecessary Behrend's supposition of the formation of new substances in the body. The influence of the drug is exerted directly,—first upon the nervous system, and, secondly, upon the skin itself. Thus, the inflammatory conditions which persist after the acute stage (*e.g.*, after quinine) are due to the direct influence of the drug upon the skin.

*Dermatitis Herpetiformis*.—Duhring<sup>5 June</sup> has published a case which he considers typical of the disease which bears his name. It was that of a man of 50, who, eight months previously, had been attacked by an eruption of pea- to bean- sized blisters upon the hands, face, wrists, and ankles. Later, pemphigoid blebs of silver-dollar size developed in successive crops over the body, nearly the whole surface being invaded. These gave place to excoriations which soon healed. Loss in weight, distressing itching, with occasional septic manifestations; low, muttering delirium; slight elevation of temperature; rapid, irregular cardiac action; diarrhœa and night-sweats were present.

When first seen by Duhring, the skin was much inflamed, excessively pigmented; of a dirty-looking, mottled, yellowish-brownish color; thickened, and the seat of an extensive eruption, consisting of small and large, more or less confluent, inflammatory patches; together with distinct individual lesions, occupying almost the entire general surface. The trunk and the upper and lower extremities were completely covered with a multiform eruption of a mixed, chronic, subacute, and acute character, arising from a chronically-inflamed, infiltrated, and toughened skin. The greatest possible variety of inflammation existed in the form of a continuous mass or sheet of eruption, there being no healthy skin on the affected regions.

The lesions were macules, papules, irregularly shaped and defined, flat or spread out (as in erythema multiforme), and of various dimensions; vesico-papules and vesicles, varying in size from a small pin-head to a pea, some being flat, glistening, and blister-like, others raised and surrounded by a somewhat drawn together or puckered, highly-inflamed base, as in herpes zoster. Many of the vesicles were minute and scarcely visible, except in

oblique light. There were some large and small blebs and some small pustules, evidently such from their incipency.

On the shoulders and back the commingled and grouped papules, papulo-vesicles, vesicles, and pustules, some marginate and grouped in patches, with marked pigmentation, presented a likeness to a syphilitic eruption. Excoriations and abrasions due to scratching, blood-crusts, etc., were also present, showing a picture of great multiformity, such as is seen in no other disease. The general type, however, was herpetiform, resembling H. iris, H. simplex, or erythema multiforme. Itching and burning tormented the patient day and night. He was nervous, irritable, and anxious.

In connection with this typical case, the clinical features of which are sketched with Duhring's masterly hand and deserve to be remembered by all who would be familiar with this curious and stubborn affection, allusion may be made to 3 cases reported by Stelwagon,<sup>245</sup><sub>Feb.</sub> who has studied the affection.

Stelwagon's cases comprised in 2 instances the vesicular variety and in 1 a multiform eruption, sometimes simulating pemphigus, at other times erythema multiforme or herpes iris (1 case was diagnosed by New York dermatologists erythema multiforme). The cases were under observation during long periods. They were characterized, in common, by great chronicity, rebelliousness to treatment, severe pruritus, and herpetic character of eruption, without tendency to atrophy, ulceration, or scarring.

Dunlap,<sup>760</sup><sub>Sept. 6</sub> gives a well-noted case of the same disorder.

In a brief paper on the "Relation of Impetigo Herpetiformis (Hebra and Kaposi) to Dermatitis Herpetiformis" (Duhring), Duhring himself<sup>5</sup><sub>Mar.</sub> gives an historical account of his clinical investigations in this curious disease. He had in his earlier descriptions included the "impetigo herpetiformis" of Hebra under the category of dermatitis herpetiformis. To this Kaposi dissented, and in an article, reproduced in the ANNUAL for 1888, with chromo-lithographs, he endeavored to establish a separate identity for the affection first described by Hebra and himself.

According to Kaposi, his disease is invariably characterized by superficial military pustules, which begin as such and remain unchanged throughout their entire course, always arranged in groups and clusters, new lesions appearing on the border of older and

crusted confluent pustules, in one or more series, on inflamed bases, while recovery takes place in the centre; furthermore, the disease occurs only in pregnant or puerperal women, and is accompanied with chills and marked fever, and is almost invariably fatal.

This definition, according to Duhring, is simple and clear, but is not sufficient. He points out that it will not even cover the appearances presented in the plates of Hebra and Kaposi's Atlas, and marked "impetigo herpetiformis." One, at least, of these very plates resembles Duhring's disease much more closely than it does Kaposi's definition of the affection, having the same name as that on the portrait.

Duhring, however, does not desire to arouse a controversy over terms, but favors the retention of Kaposi's name for the cases described by that writer, and the inclusion under that head of all cases which fit the rather procrustean definition of the Viennese dermatologist. These, I fancy, cannot be many, for it seems to me that the narrow definition given to impetigo herpetiformis above must exclude a great many cases which will find a congenial home in the more liberal and comprehensive term "dermatitis herpetiformis."

I shall here give a brief description of that disease, based upon the brief paper published recently by Duhring ("A Case of Typical Dermatitis Herpetiformis" <sup>5</sup><sub>June</sub>), and of which an abstract has been given above. I think it desirable to do this because all practitioners should be prepared to recognize this disease and aid in its further study. At present its etiology and pathology are practically unknown, and the treatment of the severer cases, as will be seen below, no more than palliative, and often not that.

Paraphrasing Duhring's beautiful clinical description of his typical case, we have a chronic multiform skin affection characterized by a diffuse distribution of separate and grouped, more or less confluent, inflammatory patches, together with distinct individual lesions which may at times, in severe cases, involve almost the entire general surface. The variety and type of these lesions is confusing in its complex multiformity. Mixed, chronic, and acute lesions arise from an inflamed, infiltrated, and toughened skin. Macules, maculo-papules, papules irregularly shaped and defined, flat or spread out (as in erythema multiforme), and of variable dimensions; vesico-papules and vesicles, varying in size from a

small pin-head to a pea, some being flat, glistening, and blister-like, others raised and surrounded with a somewhat drawn together or puckered, highly inflamed base, as in herpes zoster, comprise a portion of the lesions. Some of these vesicles are so minute that they are scarcely visible, excepting in an oblique light. Here and there, small and large blebs may exist; also small pustules, which are pustules from the beginning. These may be pin-head to millet-seed size, and occasionally present a flat, punctate appearance. The various lesions are found together in all stages of évolution, and are often grouped into marginate patches. Marked pigmentation in patches is another feature of the disease. Excoriations and abrasions due to scratching, blood-crusts and slight, yellowish and brownish crusts about the summits of vesicles and pustules, together with torn adherent epidermis, are everywhere present.

The dominant feature of the eruption through all this multiformity is, however, that of an herpetiform disease. The distribution and general arrangement of the individual lesions and of the patches, the progress and the manner of extension, all suggest certain symptoms common to other erythema multiforme, herpes iris, or herpes simplex. Occasionally the grouping or bunching of three or four small vesicles or vesico-pustules on an inflamed base resembles an abortive patch of herpes zoster. [My impression is that some of the recorded cases of "recurrent herpes zoster" will turn out, on examination, to have been cases of dermatitis herpetiformis.—A. V. H.] Some cases resemble closely erythema multiforme of an advanced stage and severe type.

Itching and burning to a severe degree torment the patient by day and night. The general health may be considerably disturbed at times, as shown by the nervous, anxious, irritable state, the loss of appetite and of sleep, and the excessive sweating and great thirst. The urine may be cloudy and dark and variable in quantity, as is the case in other forms of general nerve depression.

The above points, as given by Duhring, form a fair picture of this disease as it presents itself in a typical case and at the height of the attack. In many cases alternate eruptions of herpetiform and impetigo-like or bullar lesions occur, sometimes separated by weeks or even months of comparative freedom.

At the meeting of the American Dermatological Association,

Dulring<sup>245</sup><sub>Nov.</sub> read a paper on the treatment of dermatitis herpetiformis, the chief point in which was the use of sulphur by vigorous friction. Though severe, it does good in the vesicular and bullous forms. Stelwagon finds benefit from arsenic and laxatives; liq. carbonis detergens and liq. picis alk. also seem to do good. Taylor finds benefit in listerine and calomel, applied to the surface; also Lassar's paste with carbolic instead of salicylic acid. None of the Dermatologists present seemed to have gained any uniform benefit from the use of internal treatment, though some cases seemed to improve. (See also "Pemphigus.")

*Eczema—its Nature and Treatment.*—Unna,<sup>475</sup><sub>ii.27</sub> in a paper read before the British Medical Association, says that, before a debate on the treatment of eczema can be had, some agreement in, or, at least, some exact statement of, our ideas of the pathology of this disease must be formulated. Unless we are once more to harrow the arid field of empiricism, we must first make clear the general principles of our therapeutics. Let us then first consider—"What is Eczema?"

Unna goes on to speak of the triumphs of bacteriology, and alludes to the peculiar liability of the skin to the assaults of micro-organisms. Those with which we have been heretofore familiar, the microsporon, the achorion, and the trichophyton, are relatively harmless. We are beginning to suspect, however, the existence of many others. When we have to do with the more powerful organisms, we have trouble in studying them, because it requires fewer of them to give rise to great disturbance, and because they themselves are hidden and destroyed by the effects of their own ravages. Artificial culture will alone throw light upon the life-history of these micro-organisms.

As regards eczema, cultivation experiments upon the epidermis have already revealed so rich a dermatological flora that it is hardly unlikely that some of the fungous elements should be concerned in the production of this disease.

It is too late, now-a-days, to say, "I do not believe in the parasitic character of such-and-such a disease because no pure cultures of a specific organism have been made in connection with it." Lister did not wait until pure cultures of staphylococcus and streptococcus had been made before putting into practice his anti-septic treatment, nor should we wait before proceeding to experi-

ment clinically on the basis of a parasitic theory in the treatment of eczema.

Unna continues with a critical and historical survey of English theories of the etiology of eczema from Willan's time to our own, and concludes by propounding, what must strike some readers with amazement, a parasitic cause for the disease. "The true, real cause [of eczema] is the implantation of a germ, most probably vegetable in character." This germ, however, only flourishes when the soil in which it is implanted is favorable. Hereditary influence, intercurrent constitutional diseases, especially such as rheumatism and gout, which alter the character of the cutaneous secretions, changes in the texture of the skin resulting from development of the body at various periods, dentition, menstruation, the climacteric, etc., and fevers or other acute diseases, all act as predisposing causes to influence the skin to the reception and nourishment of the germ of eczema. As exciting causes, heat and cold, or the pre-existence of other skin diseases, may be mentioned. Perhaps these should rather be termed accidental favoring influences upon the soil.

Unna's definition of eczema is that it is a *chronic, parasitic catarrh of the skin, with desquamation, itching, and the tendency, when irritated, to result in exudation and marked inflammation.*

As an argument in favor of the parasitic theory of eczema, Unna cites the successful treatment of this disease by parasitocides and concludes with the following theses:—

1. The treatment of chronic eczema should properly be carried out in two directions. (*a*) The germ itself is to be attacked by parasitocides. This is the *direct* treatment. (*b*) The soil is to be so modified that it shall be an unfavorable one for the development of the specific germ. This is the *indirect* method. Both of these methods should be combined.

2. The radical treatment of eczema demands that the germ should be followed into the remotest recesses of the epidermis and its annexes. A diminution in the symptoms of eczema is not equivalent to a cure of the disease. This can be attained, however, by the continued employment of specific applications.

3. There are various kinds of chronic eczema, distinguished from one another by their symptoms and course, and which are caused by various germs. These do not constitute "stages" of eczema, but each form has its own type and variations and its own



specific treatment. For example, we have scabious eczema, seborrhœic eczema, follicular eczema, and papular eczema.

4. The treatment of these etiologically various forms of eczema being in each case different, attention is called to only one,—*seborrhœic eczema*. This begins as a desquamative erythema, and may continue as such or may develop into a moist, squamous, crusted, or psoriasis-like exanthem. Alkalies, certain metallic oxides, and the group of “reducing” agents are specific against this form of eczema. Of these, potassa, oxide of zinc, oxide of mercury, sulphur, resorcin, pyrogallol, chrysarobin, and the tar preparations are chiefly to be mentioned.

5. As in all forms of eczema, the drug must be chosen according to the grade of the inflammation. When there is much inflammation and discharge, oxide of zinc, oxide of lead, sulphur, and resorcin are indicated in powder, paste, or gelatin. When there is a lower grade of inflammatory action, the other remedies in ointments, salve-mulls, and impervious bandages are to be employed.

6. That application is in all cases to be preferred which acts most strongly against the specific germ with the least irritating action on the skin. Artificial irritation is only required in case of apparently-healed patches, when it is desired to test the possible retention of germs, which are then to be destroyed by antiparasitic methods as above.

7. Arsenic is the only internal specific in seborrhœic eczema.

8. In seeking new specifics against the various sorts of eczema, regard must be had for their harmlessness toward the system generally; particularly in the case of reducing-agents, care must be taken of the possible irritative effect of the products of oxidation. Here, for example, chrysarobin is superior to pyrogallol.

*Elephantiasis Telangiectodes and Molluscum Fibrosum*.—Calwell<sup>2</sup><sub>Jan.4</sub> describes the case of a small, rather deficient man of 28, whose father and mother had suffered from small, subcutaneous tumors, and who showed a number of sessile tumors, more or less subcutaneously movable over the body and limbs, excepting the hands and feet. There was inequality of the lower extremities, the left thigh being 18 inches, the right 14 inches, in length. There was marked irregular hypertrophy of the left femur, and on the left tibia was a large osteal growth, 6 inches

long, 2 inches broad, and 1 inch deep. The left foot was a little larger than the right. Large, loose folds of elephantiasic growth existed on the outer and anterior parts of the left thigh; another commenced on the inner side of the same part and ran down the posterior; a similar fold ran along the calf. When the limb was



ELEPHANTIASIS TELANGIECTODES AND MOLLUSCUM FIBROSUM.  
(*British Medical Journal.*)

held horizontally, the fold on the back of the thigh hung down about 6 inches.

The skin over these folds was rough, with large papillæ, in many of which were comedones, and the whole fold had a "lobulated, doughy feel, like that of a pendulous mamma." On much exertion the folds swelled somewhat, giving the patient a sensation of fullness and tension, and a fall on the left knee caused a huge

hæmatoma in the fleshy growth,—both of which facts would be expected, from the usually-assigned pathology of Virchow and Kaposi, of fibro-vascular hypertrophy. The two conditions had existed since infancy. A similar case is that of the “elephant man,” reported elsewhere in this volume of the ANNUAL.

The case illustrates (1) the affection being congenital; (2) its occurring in one somewhat imperfectly developed in mind and body; (3) the connection between the two forms of the disease; (4) the usual pathology assigned; (5) a condition analogous to the fibro-vascular hypertrophy of the subcutaneous connective tissue taking place in the osteal tissue (?). The pathology, etc., is given by Hebra,<sup>1021</sup><sub>v.3</sub> Hutchinson,<sup>1022</sup> Liveing,<sup>1023</sup> and elsewhere.

*Herpes Menstrualis*.—R. Bergh<sup>28</sup><sub>B.10,H.1</sub> gives an interesting historical account of our knowledge concerning herpes of the female genital organs, and adds to it the results of his personal experience as official medical examiner of prostitutes in Copenhagen. Unna<sup>245</sup><sub>p.321,'83</sub> found it in 7.6 per cent. of his cases, but Bergh has only found it in 2.6 per cent. He describes the affection as follows:—

On its first appearance vulvar herpes shows itself in the form of one or several groups, each numbering from five to eight pin-head-sized vesicles. Occasionally these may be much more numerous, but they are always small. Excepting the very smallest lesions, each vesicle is surrounded by a reddish areola, while the whole group, however small the lesions, is surrounded by a red areola. In rare cases the affection appears in concentric rings, like herpes iris. The vesicles are usually discrete at first, afterward coalescing and becoming wrinkled, with milk-white contents, and dry into crusts, which become detached and finally fall off without leaving any scar behind. Occasionally the lesions join to form one large patch, which, especially if subjected to injury, results in superficial erosions, or, rarely, ulcers. The appearance of the eruption is usually accompanied by slight itching. Actual neuralgic pain has never been observed by Bergh, nor have the prodromal symptoms of abdominal weight with peculiarly severe itching, as observed by Doyon in men; nor has the local hyperæsthesia noted by Schwimmer at the outbreak of the eruption been observed. The outbreak of the eruption, in Bergh's experience, is accompanied by a slight local burning, with occasional enlargement of the inguinal glands, usually the internal glands. Vulvar herpes

is usually unilateral, but, contrary to our experience in herpes zoster, is also, not infrequently, bilateral. In rare cases it occurs in the median line, on the pubic region, clitoris, etc. Its usual seat is on the labia majora. Among 284 cases observed by Bergh, 210, or 80 per cent., were on the labia majora and its immediate neighborhood, 25 on and about the nymphæ, and the remainder in various parts of the ano-genital region. The lesions occurred very rarely on the clitoris and its neighborhood or about the vestibule.

Bergh has met with herpes on the cervix uteri in a number of cases. He does not agree with Profeta that this form is always accompanied by vulvar herpes. Out of 5 cases of cervical herpes observed by Bergh, vulvar herpes was only co-existent in 1 case. Herpes of the vaginal walls has never come under Bergh's notice.

Inoculation experiments and the search for bacteria have proved fruitless in Bergh's experience. Occasionally facial herpes accompanies vulvar herpes, and when the affection is connected with menstruation they may alternate. Bergh concludes, in agreement with Unna, that vulvar herpes is a common affection among prostitutes. Nor is it extremely rare among women generally, although, curiously enough, gynæcologists do not seem to have recognized this fact.

Vulvar herpes is peculiarly connected with menstruation, usually as a precursor, but also as an accompaniment. In 877 cases of genital herpes observed by Bergh, 644, or about 73.4 per cent., were menstrual. No case was observed in females who had not yet menstruated. Neither herpes nor any other menstrual skin disease is to be regarded as "vicarious." They are the result of disturbance of innervation. Bergh does not think that herpes in prostitutes is due to overexcitation of the genitals, nor does he at all believe it to be the result, near or remote, of venereal disease. He thinks that frequent coitus may, however, be an additional exciting cause, especially as prostitutes are accustomed to ply their calling as usual throughout the menstrual period. Herpes genitalis is, then, in Bergh's opinion, a result of the menstrual process, and is somewhat commoner in extremely sensual or neurasthenic individuals.

Operations about the genital region sometimes give rise to herpes, but generally at a distance,—not vulvar herpes, but guttural, labial, or auricular herpes.

Finally, in Bergh's experience genital herpes is more common among women than among men.

*Herpes Zoster in Children.*—Droixhe<sup>256</sup><sub>Nov.30,'99</sub> says that zoster is rare among children. He bases his remarks on 22 cases. Fifteen of these were girls. The affection occurred most usually on the right side and on the thorax. Zoster of the limbs is rare. The affection is commoner in cold weather.

Most children suffering from herpes zoster showed digestive troubles. "Nervoism," acquired or hereditary, seemed to have little influence in the causation of the disease. It is benign, seeming to give rise to no subjective symptoms. After the 10th year children suffering from zoster seem to be liable to neuralgic pains.

The treatment is local and protective. A powder of salicylate of bismuth and talc is useful, or borated vaselin, or even absorbent cotton is sufficient.

[I am inclined to think that the writer underrates the frequency and severity of herpes zoster among children. Reports of such cases occurring in general practice are much to be desired.—A. V. H.]

*Herpes Zoster with Spinal Symptoms.*—Terré<sup>36</sup><sub>Sept.</sub> has observed in 2 cases of thoracic herpes zoster a diffuse radialgia. This is a painful sensation in the spinal region, both spontaneous and increased by pressure. It is localized along the chain of the spinal apophyses and a little on each side of these, and extended from the third dorsal to the second lumbar vertebra in the cases observed. The pain persisted, though to a less degree, after the eruption had disappeared; pressure induced it. Terré thinks that in some cases zoster is a dermato-neurosis indicative of disturbances of nutrition of the nerve elements in course of the evolution of an infectious malady. Cases of zoster in the course of spinal affections with gross tissue-lesions have been reported, and also in complaints associated with spinal irritation, as in hysteria, or in connection with spinal neuralgia. Sometimes the spinal pain is much below the point of emergence of the nerves affected by neuralgia. May not this be a form of epidemic cerebro-spinal meningitis, where the zoster is a secondary symptom?

*Recurrent Herpes Zoster.*—M. B. Hartzell<sup>5</sup><sub>Apr.</sub> reports the case of a man of 45, in poor health, who was seized with severe neuralgic pains in the upper and inner part of the right thigh, which,

after forty-eight hours' duration, began to diminish, while a group of characteristic patches of herpes zoster made their appearance at the seat of the pain and ran the usual course.

Three weeks later the patient was again seized with severe pain; this time, however, over the sacrum and down the back of the thigh along the course of the great sciatic nerve. After a day or two an eruption similar to the first appeared over the sacrum and ran the usual course.

The attacks continued to recur at intervals of three or four weeks for a year or more, the pain and eruption being sometimes situated over the sacrum,—the most frequent site,—sometimes over the inner surface of the thighs, and once, at least, on the right side of the scrotum. Both thighs were affected, the right usually. Some attacks were bilateral.

Under the use of iron, arsenic, and codliver-oil, the attacks became less frequent, until a year of freedom resulted. Neglect of treatment followed, and at the time of the report the patient was again suffering from recurrent attacks. The writer refers to a number of similar cases reported.

*Horns, Warts, and Epithelioma.*—Foulerton,<sup>408</sup><sub>v.23</sub> in a paper on the “Pathology of Horns Occurring in Man: Warts and Epitheliomata,” divides horns into three groups: 1. Those formed by the overgrowth of a toe-nail. 2. Those formed by the protrusion and subsequent desiccation of the contents of an atheromatous cyst through a larger or smaller opening in the cyst-wall. 3. Those which begin as warts and are distinguished as papillary horns. A variety arising from a dermoid instead of an atheromatous cyst, and in a similar manner, is also known in animals. Horns have also been observed growing from the scar of a burn. It is only the third variety, or papillary horns, which are properly so called, since these alone are living growths.

Anatomically, a wart may be considered as an enlarged papilla or process of the corium, covered by an abnormally thickened layer of epidermis. The thickest part of the epidermis is the stratum corneum. The thickening of the stratum corneum is accounted for by the fact that, under the influence of irritation, the cells of the stratum Malpighii proliferate more rapidly than is natural, and also that under the same influence there is a tendency for the cells of the stratum corneum to cohere with greater tenacity

than usual, and so they are not shed so rapidly as they ought to be. This latter pathological effect of irritation is seen in its simplest form in the production of a corn.

When a wart is to develop into an epithelioma, there is more active proliferation of the cells of the stratum Malpighii, and consequently the cells of the stratum granulosum are developed with greater rapidity than they can be disposed of by undergoing their normal metamorphosis into cells of the strata lucidum and corneum. This metamorphosis is largely due to desiccation, external friction, and pressure, to which must be added the deprivation of the nutrient fluid as the cells are pushed upward by the formation of new cells beneath them, and so farther away from the vascular corium. When this formation of new cells in the deeper layers is going on at a rapidly increasing rate, while the metamorphosis and casting off do not undergo a corresponding acceleration, the progress of individual cells in a normal direction—that is, toward the surface—is checked, and they tend to accumulate toward the deeper part of the epidermis, finally breaking through into the corium, when, surrounded by nutrient fluid, the individual cells proliferate independently and form a carcinoma. Foulerton, in addition to this ingenious explanation of the formation of carcinoma from horns, goes into a further discussion of the general subject.

*Keloid.*—Plicque<sup>100</sup><sub>Oct. 11, et. seq.</sub> gives a general review of our knowledge regarding this disease, which, properly we think, he prefers to call “cheloïde” (χελῶν, a crab’s claw), as is usual among French writers. Keloid may develop spontaneously or in cicatrices. The two varieties run into each other. Cicatricial keloid often originates in the most insignificant scars. Bites of leeches, erosions, or pin-scratches are enough in individuals predisposed to the disease. Lehonneur<sup>1006</sup><sub>56</sub> saw a case where the pressure of a shirt-button was sufficient to give rise to keloid. Besnier has seen multiple keloid follow non-parasitic sycosis, and I have observed the same in several cases. Acne, especially of the variety known as acne indurata, of the back and chest is often followed by keloid. Vidal has seen keloid of the subhyoid region following the irritation of a collar, which first induced acne and then favored the production of keloid in the acne scar. Keloid of the lobe of the ear following the piercing for ear-rings, or wearing rings, is not unusual.

More commonly, however, cicatricial keloid follows more

serious lesions resulting in scars. Burns, especially from chemical agents, as sulphuric acid, petroleum, etc., are well known to favor keloidal scars.

Reported cases of spontaneous keloid, says Plicque, are rare, and their entirely spontaneous character difficult to prove. I can readily believe this. Indeed, I have never seen a case of spontaneous keloid, and have always been of the opinion that keloid can never occur save as the sequel of cicatricial formation. Plicque, however, considers that the observations of Wilson, Kaposi, Vidal, and Schwimmer, including 72 cases in all, of spontaneous keloid, put the occurrence of this form beyond a doubt. Schwimmer's patient developed 150 keloidal tumors, from pea to hickory-nut size, within six years. The lesions were seated on the right lateral thoracic region. Their number and unilateral distribution negatived the view of a cicatricial origin. Moreover, microscopic examination showed the keloidal formation merging in all directions into healthy tissue, without any cicatricial appearance. Some cases have been reported, as that of Ovy,<sup>7</sup> p.21,75 where cicatricial keloid tumors co-existed with spontaneous pelvic tumors. A similar case was reported by Amices.<sup>1024</sup> p.53,79

In the case both of spontaneous and of cicatricial keloid, some constitutional peculiarity seems to be present. Scrofula seems to be a predisposing cause. A general antiscrofulous treatment often brings about decided improvement in the lesions, and is even said to have caused their disappearance. In many cases, however, no constitutional cause can be adduced.

The predominance of keloid in youth and adult life and in the female sex should be mentioned, though this may be deceptive, because young females are more solicitous of their appearance. The proneness of the negro race to keloid is well known. An hereditary predisposition has been noted in some cases.

The pathological anatomy of spontaneous and of cicatricial keloid is the same. Both are composed of bundles of connective tissue, forming a close net-work, and of a certain number of fusiform cells. The relative proportion of the two elements depends upon the age of the growth. In the older growths fusiform cells are rare, while in recent keloid they are numerous, sometimes forming nests in the mesh-work of the connective tissue. This form is much more vascular, and may approach the sarcomata in



structure, while the older lesions resemble fibroma. The embryonal cells are not limited to the macroscopic growth itself, but are found, to some extent, in the surrounding structures of the skin, prolonged along the sheaths of the vessels. This is an indication for a larger sweep of the knife, in cases where surgical relief is sought, to prevent relapse.

The difference between spontaneous and cicatricial keloid only lies in two accessories. The former is covered by the papillary layer of the cutis, which is lacking in cicatricial keloid. Also, the bundles of connective tissue are arranged in parallel to the longitudinal axis in spontaneous keloid, while in the cicatricial variety they diverge in various directions like the fibrous tissue of scars. These differences, however, are only of detail. Both forms of keloid are to be considered as belonging to the fibro-sarcomata. The benignity of keloid can be explained by the fact that, as the growth progresses, it tends to lose its sarcoma-like character, and to take on a fibroid structure. Jacobson<sup>226</sup><sub>v.30,p.39</sub> has shown that in any case the sarcomatous elements are so separated and hemmed in by the connective-tissue bundles that their proliferation obliterates the blood-vessels, always scanty in number, and thus leads to the subsequent disappearance of the cells themselves.

While, as we have seen, the neoplastic structure of keloid is known, its pathogenesis remains obscure. None of the explanations of its causation heretofore brought forward have proved satisfactory.

The symptomatology of keloid is very simple,—so much so, in fact, that I shall abridge even Plicque's brief account, the ordinary appearance of these lesions being familiar to every one. Spontaneous keloid is generally round, ovoid, or globular, rarely pedunculated, while cicatricial keloid takes the form of the scar in which it has arisen, sometimes assuming fantastic shapes. Though usually confining itself to the area of the original scar, yet at times a small scar may be the point of origin of an extensive keloid. The keloid tumor usually melts into the surrounding skin. Sometimes it sends prolongations in various directions which are highly characteristic. Recent keloid is usually a rose-color, and often shows small blood-vessels on the surface. Sometimes these are so numerous that the lesion resembles *nævus vascularis*. The sternal region is the favorite seat of keloid, and, next to that, the neck, the back, the lobe of the ear, and the deltoid region.

Keloid is usually painless, but sometimes tender. Occasionally it is the seat of constrictive feelings, pruritus, or severe pains, often varying with the weather or seeming to be due to malaria or rheumatism.

The evolution of keloid is ordinarily very slow and limited. After having rapidly attained its full development cicatricial keloid remains stationary. The lesion simply becomes less vascular and paler. Plicque says that the lesions rarely undergo spontaneous absorption. Hebra and Hardy, however, he says, seem to intimate the possibility of such a termination, and I may say that I have in several cases observed partial or complete absorption, spontaneous or due to the remedies used,—I am inclined to think the former.

The prognosis of keloid is generally favorable so far as degeneration into a malignant growth is concerned. It partakes of the character of a malignant growth in one respect, however,—its well-known tendency to return, after removal with the knife or by caustic, to an even greater volume than its original. Any operation with the knife should go aside of the apparent border of the tumor, for reasons mentioned above.

The diagnosis of keloid ordinarily presents no difficulties. If ulcerated, as it may be occasionally by rubbing, it may be mistaken for epithelioma, but is more likely to be confounded with the gummatous syphiloderm. Some of the cases of keloid cured by iodide of potassium have probably been gummata which have been mistaken for keloid. The diagnosis of spontaneous keloid, Plicque says, is more complicated. It may be at times difficult to separate it from scleroderma or cutaneous lymphadenoma in its earlier stages. Fibroma may also be mistaken for keloid at times.

The treatment attempted in keloid has been threefold: 1. *Medical*. Locally, ointments of mercury and its salts, combined with pressure; tincture of iodine; emollients, as warm baths or starch poultices; caustics. The latter always make matters worse, says Plicque, though one case is reported where cauterizations with nitrate of silver were successful. Internally, codliver-oil, iodine, and sea-bathing have been used to advantage. Local pain is to be controlled by narcotic ointments, hypodermics of morphia, and the continuous electric current. Quinine and salicylic acid internally occasionally give relief. 2. *Ablation*. Plicque says that 2 to 4

centimetres of margin should be left in cutting out a keloid, and the operation should go down to the aponeurosis. The thermo-cautery is of doubtful value. Compression is useful in connection with operations. Operations are useless when keloids exist in great numbers or tend very evidently to return. 3. *Scarification*. Scarification, acting by repeated division of the terminal nerve-fibres, is doubtless the most efficacious means of treating keloid, especially when painful. The scarificator, or a small, very sharp bistoury, is held like a pen, and parallel incisions are made lightly and rapidly by movements of the fingers and not of the wrist. At first the incisions may be made at the distance of 1 centimetre one from the other; later, they may be made closer. The incision should be carried a little beyond the border of the keloid, and should go through its entire thickness. Vidal considers the total thickness of a keloid to be three times its height above the level of the skin. The incisions should be made perpendicularly to the surface and not obliquely. Two series of incisions at right angles to each other should be made. Local anæsthesia should be avoided, if possible, as it prevents accurate delimitation of the tumor and favors hæmorrhage. The slight bleeding which does take place can be controlled by cotton compresses applied while the operation is proceeding. Emplastrum de Vigo forms the best dressing. Union by first intention is obtained, and after five or six days no trace of the operation remains. It is better to disinfect instruments, etc., to avoid all danger of erysipelas. The sittings should be about a week apart. Each operation is less painful than the preceding. Brocq recommends electrolysis by numerous punctures.

*Leprosy*.—Beaven Rake, in his valuable Annual Report, <sup>1025</sup><sub>89</sub> remarks that the question of contagion continues to be a burning one, and says that the cases of Father Damien and that of the inoculated Hawaiian convict, Keanu, are not to be accepted as logically final, since both occurred in a country infested with leprosy. Living in a colony of lepers, we cannot be sure whether Father Damien became infected from actual contact with them, or from food, water, or some intermediary host. The question is narrowed down to this: Can a healthy person more readily derive the bacillus from an infected human being, or from food, air, water, or some host which contains the bacillus or its spores? These cases are, however, certainly an argument for segregation, for every leper may

very possibly become a centre for the dissemination of bacilli or spores in his immediate surroundings, and by reducing these centres the spread of the disease may possibly be checked. We do not yet know what is the life-history of the bacillus outside the body, but it is quite possible there is an intermediate spore stage which has not yet been recognized. This theory of an intermediate stage or host might explain the difficulty or impossibility of direct communication of the disease from one subject to another, as in the analogous case of tape-worms and other cestoda, or, again, in the case of the *filaria sanguinis hominis*, where the mosquito is the intermediary host.

Against this suggestion Rake says that it will be argued that the cestoda and nematoda are animals, whereas bacilli are plants. This, however, will not upset the possibility of a spore stage; and what nidus the spores may find outside the body is only of secondary importance.

The results of direct inoculation seem to indicate that leprosy is not contagious in a practical sense. Rake tells us that Arning,<sup>1025</sup> describing his experiments with Keanu (which, I believe, he himself does not regard as conclusive), mentions the fact that a Norwegian physician inoculated himself and 20 healthy individuals with leprous material without result, and also adds that, between 1868 and 1884, Profeta inoculated 2 women and 8 men without success.

To test the question as to the possible existence of leprosy spores or bacilli in ordinary soil, Rake examined earth from the surfaces of eight graves in the cemetery at the Leper Asylum. He thought it possible that bacilli might have been brought to the surface by earth-worms, as was shown to be the case by Pasteur in anthrax. It also seemed possible that the section of the bodies after death, which is regularly practiced at the asylum, might hasten decomposition, and so favor the rapid dissemination of bacilli or spores. The result showed bacilli and stained deeply, but, as control experiments showed similar rods and stainings in the earth of gardens, etc., these experiments must be pronounced negative.

Rake has also examined microscopically, salt pork, salt fish, and pigeon-pies, the three chief articles of diet among the negroes and coolies in Trinidad, finding rods and spores, but no evidence

of leprosy bacilli. No difference was found between fresh and decaying food. Kirk, of Upper Sind, in India, believed that blighted pigeon-pies were the cause of leprosy, but Rake's experiments were negative. Nevertheless, he believes, and I agree with him, that it is in this direction our investigations must next be made.

Rake's cultivation experiments have thus far proved negative. Inoculation of animals failed to show any growth whatever beyond the point inoculated.

Rake's observations on protective and antagonistic inoculations are very interesting. A negress suffering from well-marked mixed leprosy was inoculated with vaccine virus, with result of very marked amelioration—in fact, nearly entire relief—of all symptoms of leprosy. Pleurisy, pneumonia, variola, and especially erysipelas have also been observed as markedly retarding the progress of leprosy. Experimental inoculations of jequirity and erysipelas have, however, failed to affect leprosy.

Rake has endeavored to inject special cultures of bacillus lepræ with the object of arresting further growth in the nerves in anæsthetic leprosy, of causing the local destruction of tubercles or arrest of their growth in tuberculated leprosy, and to arrest the outbreak of tubercles in leprotic fever. With the exception of a certain amount of local ulceration and destruction of tubercles in some cases, Rake's experiments in this direction likewise were fruitless.

Rake finds that patients believe in the value of chaulmoogra-oil, and that they frequently beg for it. Experiments upon 18 patients show increase of perspiration, decrease of tubercles, improved appetite and sense of well-being, increase of sensation and increased suppleness of skin, and lessening of pains in the joints. The oil was not administered in capsules, but drunk pure. The dose used appears to have been about half a drachm to a drachm (2 to 4 grammes) daily.

He also has tried creolin, with excellent results, as a palliative and topical. In leprous ulceration it reduces the smell of the gangrene without the sickening combination of the smells of carbolic acid and gangrene. It rapidly promotes the growth of healthy granulations. It does not roughen the hands of those dressing the ulcers. There is no danger of poisoning by absorption. It is about half the price of carbolic acid.

Rake formerly advocated nerve-stretching of the external popliteal or great sciatic in perforating ulcer of the foot occurring in leprosy. Of late, however, he has slit up the ulcer by perforating the foot through the bottom of the ulcer from sole to dorsum, and then bringing out the bistoury between the toes. The wound is then stuffed with lint and allowed to heal up from the bottom by granulation.

In the latter portion of his report Rake examines into the question of kidney disease in connection with leprosy, the diagnosis between congenital syphilis and early leprosy, the treatment of early leprosy by the excision of tubercles and of later tubercular leprosy by red-iodide-of-mercury ointment. He finds that the kidneys rarely contain bacilli. The treatment by excision of tubercles in the early stages he considers hopeful. He has rarely found bacilli in the blood at any stage, and so is inclined to think, with Leloir, that there may be an early local stage. The use of the red iodide of mercury was instituted with a view to its effect as a strong germicide, but its employment was without practical results.

*Acute Circumscribed Cutaneous Edema.*—Hartzell<sup>112</sup><sub>May</sub> reports the case of a man of 40, who, in August, 1889, presented himself with a large, ill-defined, soft, painless swelling, occupying the right cheek beneath the eye and the entire right half of the upper lip. The skin over the swelling was normal, with no subjective sensation beyond a slight stiffness. The swelling had begun twelve hours previously as a small kernel, which enlarged in all directions rapidly but irregularly. This swelling rapidly reached its acme, and after remaining stationary for a short time as rapidly subsided.

Five weeks later a second attack occurred on the left side of the face, and subsequently similar irregular swellings invaded various parts of the face in succession, at times involving the tongue as well. The scalp and the mucous membrane of the larynx were involved in subsequent attacks. A lesion appeared on the forearm, which, unlike the others, had a reddish tint. This was the only lesion which appeared elsewhere than about the face and head, although the patient had had numerous attacks during nearly three years previous.

The attacks continued for some time, while the patient was under observation, a single lesion only appearing at any one time,





Pachydermatocoele and Papilloma  
with Congenital Hypertrophy of Certain Bones (Treves).  
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and the onset invariably occurring in the night. The patient, however, suffered from mild intercurrent attacks of urticaria.

There was at no time any gastro-intestinal disturbances, and a careful examination into the patient's personal and family history failed to develop any satisfactory cause for the phenomena.

Hartzell refers to similar cases reported by various writers, beginning with Milton's "giant urticaria," and gives a *résumé* of the ordinary features of the disease gathered by a comparison of cases. The head is usually affected; occasionally the trunk. The lesions are nut- to egg- sized, but occasionally as large as the fist, or larger. Tension is usually the only symptom, occasionally also slight or severe itching. The skin is usually normal, occasionally pink to red. The lesions usually last twelve to twenty-four hours, rarely two days. Only one, two, or three swellings occur at any one time.

Threatening dyspnœa has intervened in some cases from the occurrence of œdema in the air-passages. Gastro-intestinal disturbances are usual concomitants. Urticaria also occurs. In some cases the tendency to the disease appears to be hereditary. Treatment is of little avail. In Hartzell's case a saline aperient with salicylate of sodium appeared to do good.

*Pachydermatocele and Papilloma with Congenital Hypertrophy of Certain Bones*—The "Elephant Man."—Treves gives a report of this case. <sup>1001</sup>  
<sub>V, 36, p. 494; Apr. 19</sub> <sup>2</sup> The patient derived his nick-name from the proboscis-like projection of his nose and lips, together with the peculiar shape of his deformed forehead. (See colored plates.) His complaint was not elephantiasis, but a complication of congenital hypertrophy of certain bones, with pachydermatocele and papilloma of the skin. Of course, there was a story of his mother having been knocked down by an elephant before his birth, etc. It is almost certain he was born with enlargement of the bones of the skull, right arm, and feet. When a child, his skin was simply thickened, loose, and rough. He had hip-joint disease in youth, followed by lameness. As he grew up, papillary masses developed on his skin, especially over the back and buttocks and the occiput. In the right pectoral region, the posterior aspect of the right axilla, and over the buttocks, the affected skin formed heavy, pendulous flaps. A considerable part of the surface of the body, including the left arm, remained free from disease. Later, the fingers became crippled by hypertrophy of their integument.

The bony masses and pendulous flaps of skin grew steadily. The outgrowth from the upper jaw and its integument—the so-called trunk—increased so as to render his speech more and more difficult to understand. The most serious feature, however, in the patient's illness was the increasing size of the head, which ultimately caused his death. The head grew so heavy that at length he had great difficulty in holding it up. He slept in a sitting or crouching position, with his hands clasped over his legs and his head on his knees. If he lay down flat, the heavy head tended to fall back and produce a sense of suffocation. Nevertheless, the "elephant man" was in relatively good health shortly before his death. He was found dead in bed, his ponderous skull having probably fallen back and dislocated his neck; no post-mortem was obtained.

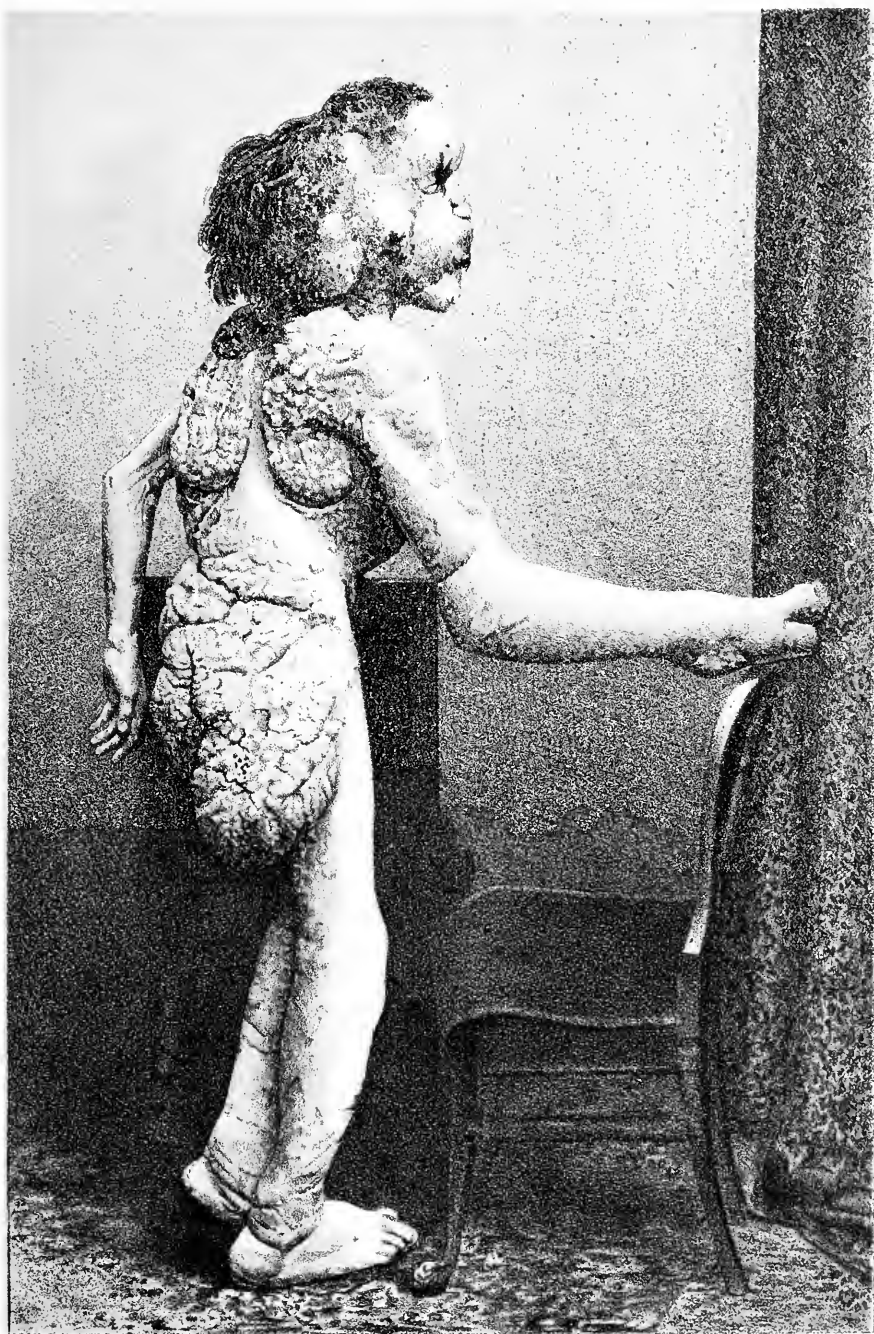
*Pellagra*.—Ludwig Berger<sup>382</sup> June says that the following symptoms characterize pellagra:—

About the vernal equinox, when the Italian laborers begin field work, the patient commences to experience an unusual bodily weakness, though his appearance may be that of perfect health. Mental depression, melancholia, and loss of "ambition," with disinclination to work, are observed. Somewhat later the backs of the hands and feet, with other parts exposed to the sun, become smooth, tense, shining, and light reddish to livid in tint. The epidermis becomes dry and desquamates in fine scales.

These symptoms gradually disappear during the autumn and winter; the patient feels well and forgets his former troubles. Next spring the symptoms return, generally in a more marked degree, but again disappear in the autumn without leaving any trace. This is the first stage of pellagra.

Gradually, after some years, new symptoms appear. The backs of the hands become more livid, rough, and callous, the lips pale, the tongue red and fissured. The salivary secretion is increased; excessive hunger and entire loss of appetite alternate. Pyrosis, cardialgia, diarrhoea, etc., follow. The nervous system begins to become involved in this second stage: sleeplessness and nightmare, giddiness; later, trembling of the lower extremities, with a tendency to fall backward or sideways, supervene, with occasional convulsive or tetanic movements.

In the third stage delirium and mania supervene; muscular



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paralysis, diarrhœa, melancholia with suicidal propensity; and either self-destruction or the lingering death of a maniac ends the scene.

The duration of the disease varies greatly. It may prove fatal in a few years or may stretch on so long as to scarcely appear to shorten life.

Most observers regard pellagra as a disease of the nervous centres, following a chronic course, and affecting, almost exclusively, the rural population of certain countries, characterized by peculiar psychical, sensory, motor, and trophic symptoms, and accompanied by gastro-enteric disturbances, with gradual degeneration of the entire system. It may occur at any age, but is most common between 30 and 50. It is more common in the female sex.

Pellagra is neither hereditary nor contagious.

The pathological anatomy of pellagra, as described by Lombroso and others, includes marked changes in the central cerebro-spinal system and meninges, with involvement of the sympathetic. The other changes found in the circulatory and digestive system are such as the symptoms would have indicated. None of the pathological changes are characteristic.

As regards the etiology of pellagra, all observers agree in placing the use of maize as a prominent factor, if not an essential one. When we come to examine more closely into the matter, however, the mode in which maize is the cause of or the instrument by which pellagra is produced appears to be still a matter of doubt.

It has been suggested that maize is an insufficient means of nourishment, chiefly because of its small proportion of nitrogen. But Hirsch points out that the symptoms of inanition are not those of pellagra, at least in its early and well-defined stages. Besides this, large populations subsist on rice and potatoes, which contain less nitrogen than maize.

On the other hand, various theories of toxic influence have been brought forward. Paltauf and Heider, the most recent investigators, maintain, after carefully examining the work of previous writers, and after having themselves performed a number of experiments, that pellagra is neither a mycotic-parasitic disease nor is it the result of an intestinal mycosis produced by a peculiar bacillus (*maidis*) which belongs to the family of potato bacilli. On the other hand, brandy prepared from spoiled maize may produce

pellagra in persons who have not eaten the maize itself. This theory is supported by the analogy of ergotism, acrodynia, etc.

Our author, however, does not seem to entirely give his assent to this theory; so that up to the present time we must consider the etiology of pellagra as still unknown.

The prognosis of pellagra is good in the first stage, unfavorable in the second, and fatal in the third.

Like all stubborn diseases, pellagra has its numerous vaunted cures. Lombroso, a recent authority, recommends paullinia and calomel when profuse diarrhœa supervenes with nervous symptoms, acetate of lead in old cases with articular pains, and, above all, arsenious acid, with which antiseptic and antifermentative remedy he has gained excellent results, even when patients have been unable to change their abode or manner of living.

The views held as to the prophylaxis of pellagra have always been dependent upon those maintained as to its etiology. It is generally agreed that the maize eaten in pellagrous districts should be carefully selected and thoroughly dried. In making bread the maize should be mixed with wheat and rye, with the proper addition of salt and leaven. The bread should be made fresh daily and the loaf should not weigh over 2 pounds.

Lombroso recommends that the maize should be boiled in diluted lime-water, and only then after cleansing and drying should be ground to meal. Public ovens to insure proper bread-making have been established in some parts of Italy. A change of diet has also been recommended. In some places pellagra asylums have been established, where the victims of the disease in its earlier stages may live in community and under proper hygienic circumstances.

I have abstracted Berger's brochure at some length because pellagra is one of those affections which, in America at least, are regarded as of only remote interest, but which the constantly increasing tide of immigration may at any time bring to our doors.

Belmondo,<sup>591</sup> <sup>6</sup> from an examination of 20 cases, asserts that lesions in the spinal cord are invariably present in cases of pellagra. In the more acute cases there is acute general myelitis; in the more chronic, degeneration of the crossed pyramidal tract, usually most marked in the dorsal region. There is also degeneration of part of Goll's column and Burdach's. The

lumbar region, unlike in tabes, is only slightly if at all involved. Exceptionally, in addition to the above, similar sclerosis of the lateral column in front of the pyramidal tracts or of the anterior column near the nerve-root may exist. In 2 cases there was also atrophy of the ganglion-cells in the gray matter of the cerebellar tract. The spinal pia mater was opaque and thickened in the dorsal region, its vessels dilated, and some hæmorrhage had occurred in the inflammatory exudation; often chronic arachnitis (ossificans) was present. Belmondo concludes that in pellagra associated primary systemic degenerations occur constantly in the cord, accompanied by degeneration in the ganglion-cells, chronic leptomeningitis, and arachnitis. On the other hand, Mircoli found in one case great dilatation of the meningeal vessels, with hæmorrhages and with induration of the surrounding connective tissue; complete closure of the cerebral canal, with new formations of vascular tissue within it; marked vascular dilatation in the gray matter, less in the white; slight atrophy and decrease of the cells in the right half of the cervical gray matter, and no signs of inflammation or degeneration in the white column.

*Pemphigus*.—Mosler, of Griefswald, in several papers <sup>69 113</sup><sub>Jan. 2, May 29, June 8</sub> gives an excellent clinical description of a case, under the name of “*Pemphigus Chronicus Malignus*,” which I am inclined to think a case of the bullar form of dermatitis herpetiformis. Some small points, which, however, are important in the diagnosis, have not been touched upon by Mosler, *e.g.*, the presence or absence of a firm base or areola for the bullæ and the presence of pustules, which is suggested at one point of Mosler’s description.

The case was one of a woman of 39, who had had blebs in the mouth four years previously, and about three years later had broken out, over the forehead, back, and abdomen, in blebs varying in size from that of a pea to that of a dollar. Under Mosler’s observation for a year, the patient had a number of relapses, the eruption became extensive, and she finally died. Careful examination and culture failed to show any bacilli, and post-mortem examination did not throw any light on the nature of the disease. A subsequent case of “*pemphigus*” seen by Mosler, and also, I think, one of dermatitis herpetiformis, showed lesions distributed along the lines of the nerves. The cases are worthy of note, but Mosler’s apparent ignorance of the mass of material on this sub-

ject accumulated by dermatologists is striking. One of his papers is a lecture on the general subject, but he appears to have read nothing since Hebra's time.

*Pemphigus Neonatorum*.—Our corresponding editor, Levison, of Copenhagen, says that Faber observed a small epidemic of this affection in the Lying-in Hospital of Copenhagen. Two mothers of affected children presented at the same time impetiginous crusts on the cheeks and lips. Faber cultivated from the bullæ (1) the staphylococcus aureus, (2) another staphylococcus growing on agar-gelatin in a white layer, and not infectious by inoculation in mice.

Kaposi<sup>8</sup><sub>May 29</sub> gives notes of a case of "pemphigus neuroticus hystericus" where a young girl, after a wound of the finger, showed a series of lesions, preceded by burning, and coming out suddenly, like urticaria, and developing into blebs. These appeared on the extensor side of the forearm; later, on the arms, shoulder, neck, face, back, etc.

*Psorospermoses*.—These parasites are beginning to attract attention in connection with diseases of the skin, particularly molluscum contagiosum and the affection formerly known as keratosis follicularis. ("Psorospermosis folliculaire végétante" of Darier.) Psorosperms are constituted of spherical or ovoid spores, which are about the size of a red blood-corpuscle or at times larger. They present a resistant envelope, a sort of capsule, which contains a protoplasmic mass made hollow by a vacuole and furnished with one or more nuclei. The envelope forms sometimes two joined valves, which can open by a sort of dehiscence. These parasites are often united in more or less numerous colonies, sometimes visible to the naked eye. Their organization, therefore, is much more complex than those pathogenetic germs usually met with, which are only elemental vegetations represented by minute spores or rods. This group of psorosperms, demonstrated for the first time by Darier (International Congress of Dermatologists, 1889), is believed to be the cause not only of the two affections above mentioned, but also Paget's disease and possibly of some forms of superficial epitheliomata.

*Favus Fungus*.—At the recent meeting of the International Medical Congress at Berlin, Kral<sup>697</sup><sub>Sept</sub> said that the difficulty in the way of the study of the parasites of the skin lies in procuring



pure cultures. To study favus he rubbed up the crusts with sterilized sand, and from this finely-divided plate cultures were made and the fungus isolated. In this way the development of the fungus could be traced step by step from a single spore. The results of these studies are: 1. That the favus fungus is always the same and identical with that recently described by the author.<sup>45</sup> 2. This fungus is morphologically and physiologically (in cultures) different from the fungus heretofore regarded as the fungus of favus. 3. Its pathogenicity for man is established through successful inoculations. 4. With the fungus of the scalp typical favus of the body was produced. 5. In the experimentally-produced favus the fungus described was always the only fungus present.

Pick<sup>22</sup><sub>Sept. 10</sub> agrees with Kral. He inoculated 7 persons from one crust obtained from a female, some epidermically, others subepidermically, but in all cases with the one result,—a distinct cup. Again, a culture was made in a nutrient material from which others were inoculated, but the same result was arrived at,—only one fungus.

*Purpura in Children.*—Koch<sup>366</sup><sub>H. 4</sub> says that he no longer makes a division between p. simplex and p. hæmorrhagica. Three forms of extravasation are found in purpura: 1. More or less sparsely scattered, livid, red, or bluish macules, from pin-head to pea size, not disappearing under pressure. 2. Dark-red and bluish maculæ, from split-pea to coin size, not raised above the level of the skin, together with smaller lesions like those described under 1. These, in severe cases, are closely crowded together. 3. In addition to the lesions just mentioned under 1 and 2, some patients show considerable extravasations in the subcutaneous tissues. These are decidedly prominent, fluctuate, and have a bluish color. They may be the size of a quarter-dollar.

The appearance of the lesions in any given case will give some idea of the severity of the case, No. 1 being the mildest and No. 3 the most severe.

Koch has rarely observed intestinal or renal hæmorrhage in the purpura of children.

The diagnosis of purpura is easy. Flea-bites alone are liable to be mistaken for purpura patches, but these have a dark central puncture; and the almost total disappearance of the lesion under

pressure will decide the question. Moreover, the flea-bite disappears in a few hours, while the purpura macule may last weeks. Purpura of all affections is most liable to relapses. These may in some cases be prevented by keeping the patient quiet in bed for some time after the disappearance of the eruption. Koch keeps severe cases in bed two or three weeks after the last lesion has disappeared. He then allows the patient to take a few steps out of bed and return again. If no new lesions show themselves the patient can get up a little longer the next day, and so on. Koch gives his little patients ergot and mineral acids. He does not find quinine, iron, alum, or acetate of lead so useful. Warm baths he avoids, as likely to cause a relapse.

*Purpura Fulminans*.—Pickard<sup>257</sup><sub>July</sub> gives the case of a male infant, 15 months of age, who was taken with a chill followed by high fever, pulse 130, temperature 102° F. (38.9° C.), and apparent pains in abdomen. Pale and restless, anxious. He vomited and was constipated. A few hours later the child broke out with an eruption of well-marked purpura, the lesions varying from a split-pea to a quarter-dollar in size, covering his legs, with some lesions on the abdomen and face. The right ear purple. The temperature had risen to 103° F. (39.5° C.). No delirium; restless, pale, weak; pupils dilated. The child died a little later, having only been ill thirteen hours. [This case is similar to those reported previously in the ANNUAL. It is much to be regretted that no post-mortem was allowed, as we are still quite in the dark as to causation of this form of purpura.—A. V. H.]

*Molluscum Contagiosum*.—Kaposi,<sup>14</sup><sub>Dec., '99</sub> in a lecture, gives an interesting clinical account of this disease, although he does not seem to be familiar with the latest researches into its pathology.

While admitting that some cases are contagious, he says it is impossible to admit contagion in other instances. For example, certain eczematous patients suddenly show an eruption of hundreds of tumors of molluscum. Follicular eczema is particularly apt to be the variety where molluscum contagiosum supervenes. Kaposi has seen it in the convalescence of puerperal fever, and thinks abundant perspiration may favor the occurrence of the disease. He has seen a sudden outbreak of molluscum supervene in a patient taking the continuous bath.

The tumors of molluscum rarely grow larger than a small

pea. They sometimes disappear spontaneously. They may be removed with the sharp spoon. Kaposi, however, prefers to compress the tumors between the two thumb-nails. When the molluscum tumors are very numerous, frictions with *sapo viridis* may be employed, but with caution, to avoid arousing a general dermatitis. Kaposi thinks it safer to isolate children suffering from *molluscum contagiosum*.

*Scleroderma*.—In the course of a discussion on this subject, <sup>8</sup> <sub>May 8</sub> Kaposi made some remarks on the etiology and therapeutics of this affection. As regards the first, he said that the causes are various. Rabl gives a wound as the predisposing or inducing cause in 1 case. Kaposi has seen 35 cases in private practice and 140 in his clinic. In most cases a neurotic influence seems to have been at work, but this will not account for all. Nerve changes are wanting in many cases where examination has been made. Kaposi thinks scleroderma is more usually distributed in accordance with the distribution of the blood-vessels; some cases seem to be connected with lymphostasis. But, on the whole, Kaposi thinks we are still in the dark with regard to the etiology of this disease.

As regards the therapeutics of scleroderma, Kaposi thinks we should never despair of some improvement. Galvanization of the sympathetic by the constant current, warm baths, and massage have, in Kaposi's experience, given the best results. In the earlier stages spontaneous recovery sometimes takes place, but when atrophy has set in treatment is hopeless.

*Sycosis*.—Unna <sup>41</sup> <sub>No. 54, '89</sub> says that it seems almost ridiculous, in the light of our present knowledge, to hear the best authors of the past decade prating in sober earnest of a parasitic and non-parasitic sycosis. In 1887 Bockhart demonstrated that the ordinary *pus cocci*, by irruption into the hair-follicles, could set up a typical sycosis. This form of sycosis now rests on a firmer pathological basis than the hypogenic or *tinea sycosis*, which has never been studied by pure cultures and inoculation. Unna announced a third form, the *bacillogenic sycosis*, discovered in his laboratory by Tommasoli. The clinical appearance of this form is similar to that of the *coccogenic sycosis* in a mild degree, but, instead of the common *pus cocci*, we find *bacilli* of a peculiar character.

Brooke <sup>687</sup> <sub>Dec., '89</sub> calls attention to Unna's publications on this sub-

ject, and asserts that clinically, as well as microscopically, we are in a position to suppress the term "sycosis non-parasitica." There is no such thing. Brooke says that the English barbers have always recognized this, in the face of the protests of the medical faculty. Brooke's treatment of coccogenic sycosis is as follows:—

If there is much inflammation or eczema, he orders the application of a lukewarm poultice of an antiseptic starch-paste made from starch-powder 1 ounce (31 grammes), boric acid 30 grains (1.94 grammes), to be changed three times a day. This helps to soothe the inflammatory condition, to clean the skin from crusts and scabs, and to soften and empty the pustules. As soon as possible epilation and shaving must be commenced. Brooke prefers the following ointment:—

R Hydrarg. oleat. (2 per cent.),	.	.	.	5j	(31.0 grammes).
Ichthyollis sulph.-ammon.,	.	.	.	℥xx	( 1.3 grammes).
Acidi salicyl.,	.	.	.	gr. x	( 0.65 gramme).
Ol. lavendulae,	.	.	.	gtt. ij.	—M.

To get the best effect it should be applied on strips of linen, at least during the night.

Ohmann-Dumesnil<sup>109</sup><sub>Mar.</sub> depilates and applies campho-phénique. When the pustules cease to form he orders the patient to shave every morning, making his lather with a bichloride-of-mercury soap, using a 1-in-1000 bichloride solution in water. He is also cautioned to render aseptic his razor, shaving-brush, etc., by some simple means. After shaving, a bichloride solution (1 in 500 to 1 in 1000) is applied. At night the same application is to be made, occasionally varying it by the application of lanolin.

*Urticaria.*—In a brochure<sup>1027</sup> kindly forwarded me by the author, T. Colcott Fox puts forward especially the points that ordinary urticaria, as we know it in adults, is very rare indeed in tender childhood and almost unknown in infancy; that the lichen urticatus of Bateman is a true urticaria, and that urticaria is one of the most common affections of young life; that it takes on a special form in which the wheals have their centres occupied by an inflammatory lesion, which is left behind where the evanescent wheal subsides; that this inflammatory lesion is most commonly a papule, and hence the terms *lichen urticatus* or *urticaria papulosa*, sometimes a vesicle and sometimes a pustule; that the conditions described as lichen urticatus, varicella prurigo, infantile prurigo (of

English authors) following measles and vaccination, and probably Crocker's papular, vesicular, and pustular vaccination rashes are only phases of one and the same disease, viz., the urticaria of infancy and childhood.

After giving a history of the views held by the older and also by the more recent dermatologists on lichen urticatus and kindred affections, Fox examines more particularly Hutchinson's views. Hutchinson includes the morbid conditions under consideration within the title *prurigo*. He makes several groups: 1. The vesicular, including *varicella prurigo*, *vaccinia prurigo*, and *morbili prurigo*. 2. Eruption, characterized by a gradual onset and little tendency to vesiculation (bug-bites, etc.). 3. A mixed one, on which the eruption begins as *varicella prurigo*, and after an interval is followed by the other form, or the latter succeeds insensibly.

The material from which Fox draws his conclusions consists of 213 cases. He thinks the urticaria of adults is not an inflammation. The wheals vary much in form and size, and are by no means so uniform as Hebra conceives. They are usually round or oval, finger-nail sized, and less frequently somewhat irregular, unless artificially induced by scratching, etc. So, too, they differ in the extent of surface they cover and the depth to which they implicate the skin. They may be macular, papular, or almost tumor-like, and of varying colors. In children such lesions are rare. Wheals in children are almost always associated with papules, less frequently with vesicles and pustules. In the centre of the wheal in children an inflammatory lesion may almost invariably be pointed out. In Fox's opinion, the primary lesion is the wheal, and the inflammatory lesions rapidly formed are really accessory and secondary, and remain in the site of the wheals after the latter have subsided. The papules are miliary or occasionally hemp-seed sized, and when the wheal is itself small, and about the same size, the two lesions cannot be separated until the wheal declines.

While, in the majority of cases, the inflammatory lesion in infantile urticaria is a papule, yet it is not uncommon to find papulo-vesicles, and especially pustules, and, in certain situations, such as the hands and feet, large vesicles or small bullæ. There is the same tendency to pus-formation which we see in other actively inflammatory diseases in children. The lesions here described

must be distinguished from the secondary ones arising from scratching, the wheals, when torn, suppurating and producing, especially about the limbs, ecthyma. The papules themselves are pruritic only to a minor degree, and the extent to which they become excoriated and crusted varies.

The urticaria in question is found by Fox to be much commoner in the hot weather of summer-time. In chronic cases the eruption almost disappears in the winter months, to re-appear in the spring and summer. The rash tends to come out toward the end of the day, on undressing, etc. The warmth of the bed, or the rise of evening temperature, especially when intensified by bronchitis, rickets, gastro-intestinal irritation, diarrhœa, etc., has a marked influence in favoring the evolution of wheals. The influence of dentition is not very clear.

The malady may begin at any age, from a few days after birth to 8 years of age, according to Fox's records.

The affection tends to chronicity, but all the chronic cases Fox has followed up have gradually died out, just like urticaria pigmentosa. He has never met with the eruption after 8 years of age, and indeed it is rare after 5 or 6; but ordinary urticaria takes its place. It does not change into true prurigo.

The affection under consideration may be described as an abnormal irritability of skin or instability of the vasomotor nerves, acquired or innate; so that external irritants—such as scratching, frictions, insect punctures, and an increased determination of blood to the skin, brought about in the bath, in bed, by exercise and emotions and internal irritation, mostly gastro-intestinal, as a rule without effect—occasion the evolution of a multiform, disseminated, itching eruption, consisting of wheals varying in size from a split pea to the thumb-nail; as a rule, often confluent; also, in color, from a red, hyperæmic macule to a red or white or red and white, firm, raised nodule; which leave behind, on their disappearance, papules, or, more rarely, vesicles or pustules, and, when scratched, blood-capped excoriations and ecthymatous pustules. The affection is worse when the blood circulates with freedom through the skin, and so evolves most freely toward evening, when the nervous energy is exhausted, and at night, and in summer; often disappears in winter, to recur the following spring, and tends, for the most part, to continue on and off for months and years, and,

finally, at any rate, except in rare cases, to die out at 5, 6, 7, or 8 years of age. Only one child, as a rule, is affected in a family. Buboos are the exception, unless pustules are developed about the limbs, and artificial eczema is not excited. In chronic, severe cases stains may be freely left all over the skin; also scars. The eruption may be limited or general in distribution. Sometimes we see only the abdomen or shoulders, the limbs, especially the extensor surfaces, or some limited region, affected; at other times, the whole surface. The eruption may frequently be seen on the face, especially over the jaws, on the scalp, and on the palms and soles. In this it differs from prurigo, but agrees with it, in common with ichthyosis and psoriasis, in the comparative freedom from attacks of the great flexures of the limbs.

The diagnosis between this form of urticaria and prurigo is extremely difficult in early childhood, if not impossible. The scanty number of wheals, the presence of buboos, the gradual change of type in the eruption, the excessive implication of the lower extremities, and the character of the papules, will be in favor of prurigo.

The papules in urticaria may vary in size and aspect, but they are mostly small and more or less acuminate. They may, however, be very like prurigo papules. As they decline they become flattened, and then simulate lichen planus very closely, especially if no wheals happen to be present. All stages of the papules will, however, generally be recognized.

Scabies is the disease with which this urticaria, in all its phases, is constantly confounded. The absence of eczema, of cuniculi about the hands and feet, freedom of the great flexures, the chronicity of the affection, the fact that only one child in the family is attacked, the mother's description of the evolution of the eruption in white or red lumps or "watery blisters," the great access of the eruption at night, and the excessive number of wheals that may be present, will at once arouse suspicion. Special treatment directed against scabies will be useless. If wheals be present the central papules will be detected. In acute vesicular cases an abortive varicella may be suspected; but a careful study of the case, the presence of wheals, the age of the patient, and the freedom of others from attack will set the observer right.

With respect to treatment, the two causative factors must be

considered,—susceptibility of the skin and the exciting agencies. No drug, in Fox's opinion, will lessen the susceptibility. Bichloride of mercury, arsenic, ichthyol, quinine in large doses, the mineral acids, iron, iodide of potassium, aconite, chloral, belladonna in large doses, and bromide of potassium, he has tried without good effect. Fox has thought that the careful administration of opium in long-continued small doses in chronic cases has given fairly good results. He treats his cases on general principles. If the child is debilitated by varicella, measles, pertussis, etc., he seeks to restore the child's strength; if, as so frequently happens, hereditary syphilis or rickets be present, he treats that. Further, it is very essential to obtain rest for the children at night by chloral or bromide of potassium; otherwise they become anæmic and deteriorate in health.

All possible sources of external irritation should be investigated and removed. Baths may be given, even sea-water or medicated baths in some instances, with advantage; at other times only light sponging with a little tepid water, followed by a gentle drying, is possible.

In the pustular cases Fox finds nothing better than dilute ammoniated mercury ointment or paste. Ointments of styrax, or of 20 grains (1.3 grammes) of hydrochlorate of ammonium in cold cream, or of liq. carbonis detergens in zinc ointment, or of equal parts of extract of belladonna and calomel ointment, or of staphisagria, are decidedly inferior.

In the purely papular cases lotions are most convenient. Evaporating, chloroform, carbonate of soda, carbolic-benzoic (3j to Oj) acid, bichloride of mercury, tinct. soap, and oil of cade in water, and a host of other applications have been recommended; but Fox finds nothing so useful or convenient as a teaspoonful to a pint of tepid water of a mixture of  $\frac{1}{2}$  ounce of liq. plumbi subacetatis and  $2\frac{1}{2}$  ounces of liq. carbonis detergens. Sponging with weak acetic acid or weak spirits have their uses, but none of these local applications have more than a temporary effect. They should be used continuously as far as possible, and so with powdering the skin. Gee recommends sponging the skin with spirits of camphor twice a day, followed by a dusting of powdered camphor.

There is no special condition of ill health associated with urticaria, but in children gastro-intestinal disturbance in some





Crateriform Ulcer (Hutchinson)  
Archives of Surgery.



form is almost invariably present; and, looking to the close connection between such disturbance and urticaria in the adult, Fox always pays very special attention to irregularities of this kind. The gastro-intestinal disturbance is usually of an irritative kind, and consequently Fox's favorite remedy is carbonate of bismuth with carbonate of magnesia. If constipation is present, he often adds sulphate of magnesium.

*Seborrhœic Wart.*—This wart, called by Neumann "the senile wart," is the subject of a paper by Politzen.<sup>697 July</sup> He says it does not occur under the age of 40. The affection appears in the form of multiple patches on the middle of the back, the lower part of the abdomen, the sternal region, the front and sides of the lower part of the neck, and rarely upon the face. They vary in number from a few up to several score. In color they are pale fawn to almost black. They vary in size from pin-head to quarter-dollar size, rise abruptly from the surface to the height of nearly 1 millimetre, are flat or slightly convex, and, unless in uncleanly persons, are smooth and slightly reticulated, soft and greasy to the touch. In unclean persons the lesions are covered with a seborrhœic crust, which when scraped off leaves a slightly bleeding surface.

The seborrhœic wart is characterized histologically by a slightly thickened stratum corneum, a considerably thickened Malpighian layer, and in the papillary and subpapillary layer the occurrence of epithelioid cells arranged in groups and lines, separated by bundles of connective tissue, and terminating abruptly below the horizontal subpapillary plexus of vessels; together with peculiar infiltration of fat, effecting the coil-gland epithelium, the middle and papillary layers of the cutis, and the epithelium of the rete Malpighii, and perhaps an atrophy of the sebaceous glands and follicles.

*Sarcoma—Spontaneous Involution.*—Hardaway<sup>245 Jan.</sup> reports the further history of a case of undoubted sarcoma of the skin, first described by him in 1882. The lesions were numerous on the face, hands, and feet, and were deeply pigmented; moreover, there was swelling of the lymphatic glands, those at the elbow being the size of pullets' eggs and quite visible. The disease had then been in existence for eight or ten years, and showed here and there points of involution. Two years later Hardaway reported

the appearance of a number of new growths. A recent inspection, however, developed the interesting fact that fifteen or sixteen years from the beginning of his disease the patient remains in good health, that the active process has apparently ceased, and that the sarcomatous growths in the skin have undergone complete involution, leaving behind merely an atrophic condition in their stead. The patient had received no treatment.

*Xanthelasma*.—Geo. T. Jackson<sup>245</sup><sub>July</sub> gives an account of a case of this disease which is worthy of record on account of the extraordinary distribution of the lesions and the early age at which the disease began.

The patient, a boy 5 years of age, had had the eruption since he was 3 months old. The lesions were said to have appeared simultaneously.

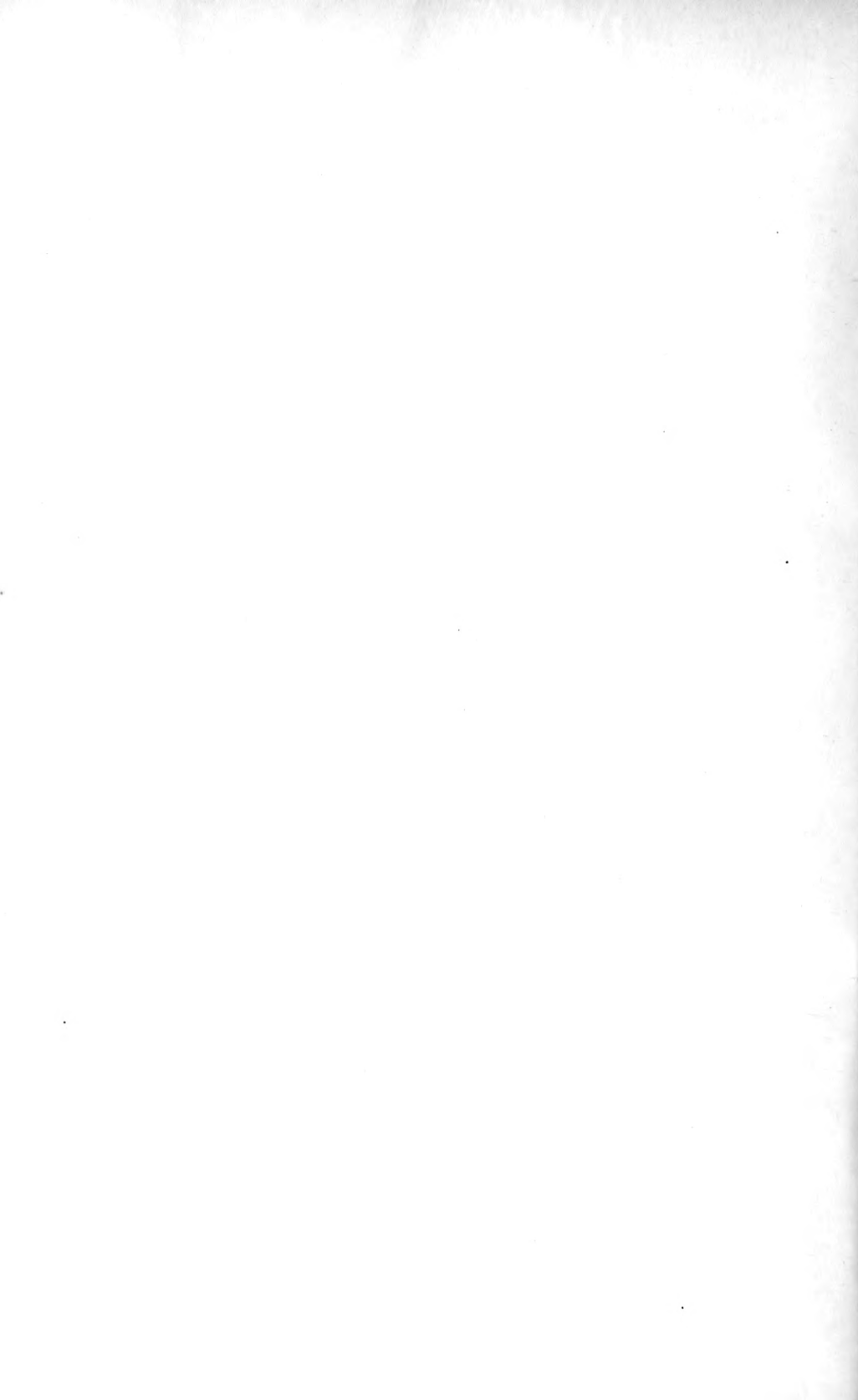
On examination the whole body was occupied by a disseminated eruption, no part being spared except the hands and feet and scalp. The lesions were about the size of a split pea or a little smaller, were soft to the touch, and had a central depression. Upon the face, trunk, shoulders, and lower part of the legs they were discrete, and scattered about without any particular arrangement. Upon the extremities the lesions were crowded into patches of various sizes and shapes, with normal skin between them. Even in the patches the lesions were distinct. They touched each other, but did not coalesce. The distribution of the lesions and of the patches was quite symmetrical. The color varied from a lemon-yellow in the discrete lesions on the shoulders to an orange-yellow in the patches. About the joints the color was reddish brown.

In the right eyelid were well-marked, typical xanthomatous patches of a chamois-leather color. The lower lid was occupied by one continuous patch, running from the inner to the outer canthus. On the upper lid there was a small tumor. The left lid was but very slightly affected. Upon the back of the neck and the upper part of the back were a number of light-brown pigmentary spots, which were said to have been the remains of some lesions that had disappeared.

In 1882 the subject of xanthelasma was investigated by a committee of the Pathological Society of London. At that time there were only 8 cases of the disease reported as occurring in children, and by the committee it was said that the eyelids of



Xanthelasma (Jackson).  
Journal of Cutaneous and Genito-Urinary Diseases.



children were not affected. Subsequent experience has shown that they were wrong in regard to the lids. Since 1882 a number of new cases have been reported. A complete list of the cases up to 1883 was published by Eichhoff.<sup>28</sup><sub>'83</sub>

In regard to the age at which xanthelasma occurs, most cases have been met with in adult life. Barlow<sup>1001</sup><sub>v.35,'84</sub> published a congenital case. In the same year Eichhoff<sup>69</sup><sub>v.10</sub> published the account of a case beginning in the second month. This makes the present case the third in point of early age. Crocker mentions a case in a boy of 2 months which had lasted for six months. This is so evidently a misprint that Jackson takes it that the child was 2 years old instead of 2 months.

Barrs<sup>6</sup><sub>v.1,p.923,'88</sub> reports a case at 1 year. Lehzen and Knaus<sup>20</sup><sub>v.116,p.85,'89</sub> report 2 cases in the 3d year and 1 case in the 4th year. Poensgen<sup>20</sup><sub>v.91,p.350,'88</sub> reports a case in the 5th year. In this case some of the tumors were excised, but returned in the same place.

Anderson and Eichhoff report cases nearly, if not quite, as extensive as Jackson, though their distribution was not identical. In a case reported by Hardaway<sup>65</sup><sub>Oct,'84</sub> the lesions on the chest followed along nerve-tracts like the lesions of zoster.

Various theories have been advanced to account for the occurrence of the disease, but there has yet appeared no one that is perfectly satisfactory. Hepatic disease, diabetes, hereditary influences, diathetic conditions, embryonic cells left in the skin,—each and all have had their advocates, but no one is sufficient to explain all cases. For the present we must be content to stand and wait.

In the way of treatment we have no sure resource save the knife and electrolysis. The latter is the more preferable of the two. In so general a case as Jackson's neither plan would be applicable. Besnier<sup>212</sup><sub>Apr.,'86</sub> reports good results from the administration of phosphorus in codliver-oil, giving 1 milligramme ( $\frac{1}{6}\frac{1}{5}$  grain) per day, and increasing the dose each day by  $\frac{1}{4}$  milligramme ( $\frac{1}{2}\frac{1}{5}\frac{1}{6}$  grain) until 3 milligrammes ( $\frac{1}{2}\frac{1}{2}$  grain) are taken. After fifteen days this is stopped and turpentine is given. Stern<sup>4</sup><sub>p.293,'83</sub> tried this plan without success, but succeeded in removing patches of the disease from the eyelids by the use of a 10-per-cent. solution of corrosive sublimate in collodion.

*Xeroderma Pigmentosum Kaposi.*—Our corresponding editor,

Carl Szadek, of Kieff, Russia, tells of a paper by Elsburg, of Warsaw, describing 2 cases of Kaposi's disease, with microscopic examination of the affected skin. This brings the reported cases up to 52, of which one-half have occurred among Jews. We may here refer to R. W. Taylor's monograph on this disease, an abstract of which, with plates and microscopic drawings, will be found in the ANNUAL for 1890.

#### THERAPEUTICS.

*Treatment of Tinea Tonsurans.*—Quinquaud, <sup>24</sup><sub>Nov.16</sub> in a clinical lecture, says that at the Hôpital St. Louis they have a school for ringworm children, who are excluded from the municipal schools and who spend their entire day on the spot. This allows a systematic treatment, and Quinquaud gives an account of what this, under his supervision, is.

The re-infection of ringworm patients often occurs through the articles belonging to them. These, therefore,—clothing, etc.,—are disinfected by dry heat. The achorion is killed in twenty minutes by a temperature of 140° F. (60° C.), but the trichophyton dies between 122° and 131° F. (50° and 55° C.). At the St. Louis the oven used to heat the baths is employed to disinfect the clothing. While the patient bathes, his clothing is disinfected. When an oven cannot be employed boiling water may be used. The articles should be boiled fully twenty minutes; four or five minutes are not enough. Nor is disinfection by antiseptics complete; the spores do not entirely perish, even in contact with carbolic acid, bichloride or iodide of mercury. It is true they germinate slowly and with difficulty, but they do germinate.

Quinquaud's process of treatment, although somewhat complicated, is, he believes, more satisfactory than any other. It is as follows:—

First the hair is clipped very short with scissors, the razor not being suitable at this stage of the disease. The disease-patches are then scraped with a dull cutting instrument, which removes multitudes of the trichophyton spores, which latter are less deeply implanted than those of the achorion. This is not the only benefit obtained from the scraping; it causes a slight dermatitis, a superficial inflammation which diminishes the vitality of the spores to a considerable extent. The scrapings should be repeated a number



of times, at intervals of five to eight days, and the head should be carefully washed after each scraping. In the interval the following lotion is to be applied twice daily:—

R Hydrarg. bichlor, . . . . gr. iv ( 0.26 gramme).  
 Hydrarg. biniodidi, . . . . gr. j ( 0.065 gramme).  
 Spts. rectif. (90°), . . . . f̄3iv (15.5 grammes).  
 Aquæ, . . . . ad f̄3ij (62.0 grammes).—M.

After several series of scrapings, etc., the spores contained on the surface of the scalp, and even some way down into the follicles, will have disappeared.

The fifteenth or the sixteenth day after the last scraping, the soap-washing and the application of the lotion having been continued, ointments may be substituted, of which the following is, perhaps, the best:—

R Chrysarobin,  
 Acidi salicylici,  
 Acidi borici, . . . . . āā gr. viij ( 0.52 gramme).  
 Vaselini, . . . . . gr. cccc (26.0 grammes).—M.

This ointment should be rubbed into the entire scalp, because there may be many incipient patches of ringworm which have not yet become perceptible to the eye.

When the ointment has been applied the scalp should be covered with an India-rubber cap, or, when this cannot be obtained, by a muslin cap tightly bandaged or fastened around the edge, particularly over the forehead, to prevent the irritating ointment getting down into the eyes. The ointment is to be renewed at the end of twenty-four hours without the first application having been wiped off. This prolonged application of the ointment deprives the spores of access to oxygen, which they require to flourish. After these forty-eight hours the scalp is to be washed with soap and water every evening for four days, the cap being applied after each washing. Then, after a little, a new forty-eight-hour application of the ointment is begun, and so the treatment is continued alternately. In the intervals the lotion must be used twice daily, for we must not allow the trichophyton any rest. It begins to germinate after eight days' repose.

Of course, this is not all of the treatment, because, excepting in the most recent cases, there are sure to be spores in the hair-follicles. In such cases we must have recourse to epilation. At the beginning of the treatment, says Quinquaud, we cannot get the

hair out by epilation, because it breaks off short; but after some weeks of the foregoing treatment the hair has recovered sufficient strength to enable us to pull it out. After epilation the whole course is gone through with once more, and by the end of that time the patient will in most cases be cured.

I have abstracted these remarks of Quinquaud because they seem to me an advance on most of the treatments now used for ringworm. His advice on the disinfection of clothing, the scraping of the patches, and particularly the postponement of epilation, seems to me particularly worthy of remark.

*Iodoform in Burns.*—Schiff<sup>28</sup><sub>Jan.15</sub> calls attention to the Mosetig-Moorhof method of treating burns by iodoform. This preparation has two advantages: it is anæsthetic and it is antiseptic. The first iodoform dressing may remain in place from eight days to two weeks,—a great saving of pain to the patient. The favorable influence of iodoform on the growth of granulations makes contracted scars with deformity less likely to occur.

Mosetig-Moorhof removes the covers of blebs, cleanses the raw surface with wisps of absorbent cotton wet with  $\frac{1}{2}$ -percent. solution of chloride of sodium, and lays upon the burn a manifold layer of iodoform gauze, made by impregnating gauze with iodoform dissolved in ether. This is covered with a sheet of gutta-percha paper to hinder the cotton from sticking when it is soaked with secretion and dried. The absorbent cotton is placed over this in a thick layer and fastened with a bandage. If the secretion soaks through the cotton, this can be removed easily and painlessly. On the face, Mosetig-Moorhof recommends an iodoform ointment (1 to 20). Over this a gutta-percha mask is placed, and this dressing is renewed daily. Altschul uses the following paste:—

R	Boli albae,			
	Olei olevarum ( <i>seu. lini.</i> ), . . . .	ââ	30 grammes	(3j).
	Liq. plumbi subacetatis, . . . .		20 grammes	(3v).
	Iodoformi, . . . . .		8 to 16 grammes	(3ii-iv).

covered, as before, with a gutta-percha mask.

To avoid iodoform poisoning, the powder is never to be strewn upon the raw corium nor upon granulating surfaces. The employment of iodoform gauze brings only a minimal amount of iodoform in actual contact with the skin.

*Aristol.*—Eichhoff<sup>28</sup><sub>Nov.2</sub> describes this new combination of iodine with thymol intended to take the place of iodoform. It is made by adding a solution of iodine in iodide of potassium to an alkaline solution of thymol. A reddish, amorphous precipitate falls, which is more crystallizable. This is a biniodide of dimethol; that is, a thymol in which the hydrogen of two groups of hydroxyle of dimethol has been replaced by two atoms of iodine, or, in other words, where the group OH has become OI,—that is to say, idoxyle. Aristol is insoluble in alcohol, glycerin, and water. It is easily soluble in ether, from which, however, the addition of alcohol precipitates it. It is also soluble in fatty oils. As aristol decomposes in the light, it and its mixtures should be kept in dark bottles. In Eichhoff's opinion, aristol possesses the valuable properties of both iodoform and thymol to a higher degree than either of its components. It is harmless and odorless. In psoriasis it is less useful than chrysarobin, pyrogallie acid, etc., but is without the toxic and irritating qualities of these applications. In the mycoses aristol is equally good with other parasitocides, without being so irritating. In leg-ulcers and tertiary syphilitic ulcers aristol is better than any medicament hitherto employed. In lupus it is far superior to any other application.

Schirren,<sup>4</sup><sub>Mar.17</sub> Lassar's assistant in Berlin, has not had as good results. He says that aristol cannot be regarded as a specific against all skin diseases, as it is already advertised in Germany. It has a certain value, however, in psoriasis, and its advantages over chrysarobin and pyrogallie acid are so great that its slower action may be disregarded.

Ganden,<sup>824</sup><sub>Mar.31</sub> says that Brocq has used aristol in a case of epithelioma with surprising results. He also recommends it moderately as a pigment with collodion in psoriasis. He refers to a recent paper by Schuster, of Aix-la-Chapelle, who recommends aristol very highly in nasal and pharyngeal syphilis. In this latter form of disease I can also speak very positively in favor of this drug. A small portion of the powder, insufflated by means of a long tube or applied on a cotton probe, has, in my hands, given excellent results in tertiary ulcer of the pharynx, when iodoform, iodol, and other applications had nearly or quite failed in giving relief. Ganden agrees also with other writers in recommending the excellent effects of aristol in varicose ulcers of the leg. In

chancre and chancroid it is of use. Contrary to Eichhoff's experience, Ganden found aristol of no benefit in lupus. He regards it as, above all, a cicatrizing and cornifying agent, and suggests the following working formulæ for its employment:—

Ethereal solution: aristol, 5 pts.; ether, 50 pts. Collodion: aristol, 2 pts.; flexile collodion, 18 pts. Ointment: aristol, 5 pts.; vaseline, 15 pts.; lanolin, 30 pts.

In a later paper<sup>824</sup><sub>July</sub> Ganden returns to the subject of aristol, and explains, following a later paper of Eichhoff, that, while cicatrizing lupus, it does not destroy the germs of the disease. He says that if the curette is first used thoroughly, then aristol comes in direct contact with the germs, and the disease heals over. Brocq has found aristol useful in tuberculous ulcer of the skin. Neisser experimented with aristol on cultures of bacilli, and found that it had much less influence in preventing the growth of septic organisms than iodoform; in fact, that it was almost without influence.

At the last meeting of the American Dermatological Association,<sup>245</sup><sub>Nov.</sub> Allen read a report on aristol, stating that this drug seems to possess valuable cicatrizing, granulating, and stimulating qualities, and is particularly useful in ulcerations. In the discussion following, Hardaway said it was not useful in psoriasis; Taylor thought it no more potent than oxide of zinc or subnitrate of bismuth; Shepherd thought it inferior to other remedies in burns; Jackson doubted its value in tinea circinata and ulcers; Morrow thought it a good dressing in chancre, chancroids, and ulcerative syphilodermata, and as valuable in promoting cicatrization after operation in lupus and epithelioma, and was inclined to take a more favorable view of aristol than his colleagues.

Kinnier, of New York,<sup>519</sup><sub>Oct. 18</sub> used aristol in 3 cases of lupus, 3 of chancroid, 1 varicose ulcer, 1 case of psoriasis, 1 of tinea versicolor, and one of erythema intertrigo. The drug acted well in all these cases.

*Antisepsis in the Treatment of Skin Diseases.*—Our corresponding editor, Ramon de la Sota, of Spain, tells us that Perez Ortiz<sup>632</sup><sub>July, '89</sub> asserts that antisepsis forms one of the most important means of treatment in skin diseases at the present time. In *impetigo*, which Ortiz considers parasitic in all its forms, he applies salicylated or germicide gauze, wet with warm water; also, solutions or ointments

of the same, or boric acid. In *ecthyma* the pustules are treated with sublimate, salicylic, or boric washes, and then dressed with emplastrum de Vigo, ichthyol, or alcoholic solution of naphthol. In *furuncle*, compression, with hot carbolic-acid solutions, deep incisions and iodoform dressings, form the treatment. In *erysipelas*, hot solution of bichloride of mercury (1 to 1000) gives a double action,—emollient and antiseptic. In *erythema multiforme*, boric-acid solutions on compresses, followed by subnitrate-of-bismuth dressings, are employed. In *tinea cruris*, a solution of salicylic acid (1 to 100) is recommended. The antiseptic treatment of *herpes* and *pemphigus*, as also of *psoriasis* and *pityriasis*, is likewise recommended by Ortiz, who, in fact, urges the further employment of antiseptics in a great variety of cutaneous disorders.

*The Treatment of Eczema in Elderly People.*—Bulkley<sup>1002</sup> says that the chief elements of causation in the eczema of elderly people seem to be a debility of tissue and a faulty kidney action. The urine is scanty and of high specific gravity, and often loaded with urates. Sugar is not uncommon. Deficient bowel action is likewise common. These facts give a basis for treatment. Local measures will not be successful if these points are not carefully attended to.

At the beginning of treatment a pill of blue mass, colocynth, and ipecac, repeated if necessary, gives relief to the system. Later, a pill of aloes and iron before meals, or small doses of calomel, even  $\frac{1}{10}$  grain (0.0065 gramme) before meals, will do well. Acetate of potassium is to be used for deficient kidney action, 10 to 15 grains (0.65 to 0.97 gramme) three times daily after meals, with nux vomica in a bitter infusion, as quassia. Startin's mixture, with, sometimes, strychnia, may be used later.

Arsenic is rarely useful, but when there is a tendency to the formation of bullæ it does good. Bulkley recommends frequent and large doses of Fowler's solution, diluted with water or Vichy. Quinine is sometimes of use. Sedatives are of great assistance. Phenacetin, in 5-grain (0.32 gramme) doses, taken with hot water on retiring, often acts admirably, the dose being repeated in an hour, if necessary; antifebrin, in 6-grain (0.39 gramme) doses, similarly used, is also often of service. Tincture of gelsemium, 10 to 20 drops, with a drop of aconite tincture, will often secure perfect rest, even when it has long been disturbed by itching; it

may also be repeated in an hour, if necessary. Opium, of course, should be avoided.

Bulkley thinks that alcohol in any form is injurious in eczema of the aged. The diet should be diminished in proportion to old age and want of activity. Eczematous patients are often over-nourished.

As regards local treatment, Bulkley prefers for extensive eczema the following:—

R Pulv. calamin. prep.,	. . . . .	℥ij	( 7.7 grammes).
Pulv. zinci ox.,	. . . . .	℥iv	( 15.5 grammes).
Acidi carbolicī,	. . . . .	℥i-℥j	( 3.9 to 7.7 grammes).
Glycerini,	. . . . .	℥vi-℥j	( 23.3 to 31.0 grammes).
Aq. calcis,	. . . . .	℥℥j	( 31.0 grammes).
Aq. rosæ,	. . . . .	ad ℥viiij	(250.0 grammes).

On one or more localized patches, especially when there is thickening of tissue, the following is useful:—

R Pulv. zinci ox.,	. . . . .	℥j	( 3.9 grammes).
Ung. picis,	. . . . .	℥iv	(15.5 grammes).
Ung. aq. rosæ,	. . . . .	℥iss	(46.0 grammes).

To be spread on lint and bound on the patches.

*Menthol.*—Eloy recommends, in the itching of chronic eczema, pruritus senilis, urticaria, etc., a tincture of menthol (1 to 3 parts menthol to 50 parts alcohol), a liniment (3 parts menthol, 30 parts each of olive-oil and lanolin). In stubborn cases the percentage of menthol may rise to 10 or 15 per cent. In chronic eczema he uses 2 to 10 parts menthol, 5 parts balsam Peru, 100 parts lanolin.

*Bismuth Subnitrate in Erysipelas.*—Sée<sup>10</sup><sub>99</sub> says that during the last four years he has used nitrate-of-bismuth dressings in his wards, and has not had a single case of erysipelas. It is also a cure for erysipelas, being applied in a thick layer of powder over the affected part.

*Hydroxylamin.*—This new remedy, which was partially described in the ANNUAL for 1890 (vol. iv, p. A-51; vol. v, p. A-67), has been made the subject of a paper by Groddeck.<sup>28</sup><sub>p.162</sub> He does not speak so favorably of the remedy as previous writers. Hydroxylamin was used in 23 cases where chloride of hydroxylamin was employed, in the proportion of 0.075 to 1.5 per 100 of the adjuvant medium. The drug was employed in alcoholic solution or in ointment. Scabies, tinea versicolor, lupus erythematosus, pityriasis rubra, eczema seborrhœicum, mycosis circinata (pityriasis rosca of

Gibert), seborrhœa capitis, and psoriasis were all treated without the least effect. Groddeck then employed hydroxylamin on the healthy skin, on which it produced no effect whatever until the proportion of 5 to 100 was reached, when the skin became in some cases irritated into eczema. He did not dare to use a stronger solution than 2 per cent., for fear of the known toxic general effect.

Groddeck then goes on to criticise Eichhoff's results, and also those of Fabry, with more severity than is usual among medical writers. Hoffmann and Koebner have spoken against this remedy. Blaschko, however, thinks it of use. His article has given rise to some recrimination on the part of his opponents, but the results must for the present be regarded as unfavorable to this new remedy.

*Absorption of Drugs from Ointments.*—Luff<sup>697</sup><sub>June</sub> prepared several ointments containing soluble drugs and placed each ointment inside a sheep's bladder (always ascertained to be free from any accidental perforation). The bladder was then suspended in a beaker of distilled water kept at a uniform temperature of 98° F. (36.7° C.) by immersion in a water-bath, and some of the water in which the bladder was suspended was at frequent intervals withdrawn by a pipette and tested for the drug contained in the ointment. It is evident that the only way in which the drug could pass from the ointment into the distilled water would be by some of the distilled water first passing by endosmosis into the bladder, then extracting the soluble drug from the ointment, and then the solution of this drug passing back through the walls of the bladder into the water contained in the beaker by exosmosis. Luff's experiments showed that this took place with some of the ointments.

Experiments were made with vaseline, lard, and lanolin as ointment-bases to see if the rate of absorption of the soluble drug varied with the recipient. Lanolin seemed to favor absorption to a greater degree than the two other bases.

*A Method of Coloring Ointments.*—Brooke<sup>697</sup><sub>June</sub> says it is often desirable to use ointments on ladies' faces when they naturally are desired to be as unobtrusive as possible. The external color of the skin is white, mixed with various shades of vermilion and yellow browns, and it is on these lines we must work to produce a colored ointment which effectively imitates the tint of the normal skin. The best whites are furnished by the carbonate and oxide of zinc. Thirty or 40 grains (1.94 or 2.6 grammes) to the

ounce (31 grammes) of one of these give a white color to any given ointment, but the quantity must vary with the other ingredients. Vermilion cannot be conveniently used, and Brooke recommends, instead, common Armenian red bole. It has somewhat an orange cast, but when mixed with white a very light carnation is the result. It contains iron, and should therefore not be allowed to come in contact with bed-linen. This color must be modified by raw umber. These ingredients should be mixed in due proportions by the aid of a spatula after the ointment has been made up. If red oxide or iodide of mercury be in the ointment the bole will not be required, while tar or ichthyol will replace the umber. Sometimes the addition of a little carmine is required. It should be added in alcoholic solution, as the powder leaves streaks of crimson on the skin. The addition of a little starch to these colored ointments makes the color more durable.

*Sulphur Fumigation in Scabies.*—Howell<sup>23</sup><sub>Nov.</sub> cures scabies by seating the undressed patient in a cane-seated chair, a blanket being thrown around him and covering him and the chair from the neck to the ground. A tripod sustaining a tin plate is placed under the chair, an ounce of sulphur is placed on the plate, and a spirit-lamp lighted under the plate. At the end of twenty or thirty minutes the patient is usually cured. Howell has in no case been obliged to use more than three fumigations.

*Thiol.*—Schwimmer<sup>8</sup><sub>Nov. 18;</sub> <sup>2</sup><sub>Oct. 25</sub> claims to have used thiol successfully in herpes zoster and dermatitis herpetiformis. The remedy was suspended in water (1 part to 3 of water). Dry, powdered thiol was found useful as an application in erythema multiforme. In papular eczema the liquid thiol is of use.

*Pilocarpine Muriate in Dermatology.*—At a recent meeting of the American Dermatological Association Klotz read a paper on this subject.<sup>245</sup><sub>Nov.</sub> Without having much clinical material to support his opinion, he maintained on theoretical grounds the value of this remedy in daily doses of  $\frac{1}{9}$  to  $\frac{1}{6}$  grain (0.0072 to 0.011 gramme), hypodermically, in pachydermatous and xerodermatous conditions of the skin. Hardaway, Stelwagon, Allen, and Jackson spoke unfavorably of their experience with the drug.

*Salicylic Acid.*—Though the uses of salicylic acid in dermatology are now pretty well known, it may be advantageous to call to mind, by the aid of our corresponding editor Szadek, of Kieff,



the various affections in which this drug has proved of value. It is in inflammatory processes with hyperkeratosis that this drug is of greatest value. In chronic eczema with infiltration, in corns, warts, lichen planus, psoriasis, salicylic acid is used with good results. In the vegetable parasitic diseases, as tinea cruris, favus, tinea capitis, Szadek has found it of value. Also in hyperidrosis of feet or hands. In impetiginous eczema of children, Szadek uses the following:—

R	Acidi salicylici, . . . . .	3ss.
	Vaselini, . . . . .	3j (31 grammes).
	Zinci oxidi amyli, . . . . .	āā 3vj (23 grammes).

Szadek uses a 10- to 20- per-cent. ointment of salicylic acid in psoriasis and verruca.

*Iodide of Potassium in Pityriasis Rubra.*—Traubvetter, according to our corresponding editor Szadek, of Kieff, has treated 2 cases of pityriasis rubra with large doses of iodide of potassium. The result in both cases was satisfactory.

*Carbolic-Acid Injections in Anthrax.*—Czarkowski, in a paper reported by our corresponding editor Szadek, of Kieff, describes a severe case of anthrax in a woman, where he resorted to hypodermic injections of 2-per-cent. carbolic-acid solution into the swollen and brawny tissue (a syringeful three to four times daily). A speedy recovery ensued. Thirteen similar cases were successfully treated in the same way,—deep injections of pure carbolic acid into the pustule and supporting treatment were simultaneously employed. Arnoldow employs injections of a corrosive sublimate in a 5-per-cent. solution of carbolic acid.

*Sulphur Preparations in Skin Diseases.*—Our corresponding editor Szadek, of Kieff, has been making some new investigations into the use of this old standard remedy in skin diseases. A case of severe acne rosacea, with pustular lesions, was cured by an ointment of 1 drachm (3.89 grammes) of precipitated sulphur to an ounce (31.1 grammes) of vaseline. He has also found sulphur useful in hyperidrosis of the hands and feet. In cases of seborrhœa of the scalp, 1 part of sulphur in 8 parts of oil proved efficacious. Szadek has also used sulphur in the chronic eczemas of children, and in ichthyosis. He uses ichthyol internally in 5- to 10- drop doses two or three times a day. It promotes the appetite and digestion, and thus aids the external effect of the same remedy.

*Mollin as a Substitute for Ointments.*—Mollin has been known for some time, but has not received much attention from dermatologists. Kahn<sup>4</sup><sub>Sept. 8</sub> comes to the rescue and urges its further trial. Mollin is a soap, and Kahn says that soaps penetrate more deeply into the epidermis and carry drugs better than ointments. It is a super-fatty soap, containing 17 per cent. of free fat. Chemically free alkali cannot, therefore, be present, and thus all danger of skin irritation from this source is avoided. Mollin is made by taking the purest mutton-tallow and the finest cocoanut-oil. The fat is saponified with potassa and a little soda in the cold in such proportions as to give the excess of free fat above mentioned. This is then worked up with 30 per cent. of glycerin by the aid of cautious heating. The result is mollin, a slightly yellowish-white, soft mass, which can easily be rubbed into the skin. It is unchangeable by time or temperature. The maker prepares a harder mass for warm climates and a softer one for colder countries.

Mollin takes up medicaments most thoroughly into its substance, and these, as mercury, for instance, can be worked into the skin much more quickly than by the aid of ointments. Of course, mollin is cleaner, and it can easily be washed off by the use of pure water.

Kahn tried mollin as an application to carry zinc oxide, salicylic acid, styrax tar, chrysarobin, and mercury, and seems to have obtained very good results in a limited number of cases. Eighteen cases of psoriasis were cured by rubbings of chrysarobin mollin on the body and pyrogallie-acid mollin on the head in a remarkably short time. The remedy seems worth a further trial, though the method of preparing it is vague, as is proper in a proprietary article.

*Saponated Glycerin Preparations.*—H. v. Hebra<sup>357</sup><sub>July</sub> says that chemically-pure glycerin, mixed with 95 per cent. cocoanut-oil soap, gives a solid body, which becomes fluid when warmed. Castile soap can be substituted for the cocoanut-oil soap. The saponated glycerin is made by warming the dried soap with perfectly pure 28° B. glycerin over a water-bath and filtering while hot. It forms, when cold, a faint-yellow, transparent, more or less elastic mass, which is quite without odor, and melts at the temperature of the body. A little of this rubbed on the hands removes fissures and roughness. It melts easily in water.

Several medicated preparations of this saponated glycerin are described by Hebra:—

R Glycerini saponat. (87 per cent.),	. . . . .	95 pts.
Acidi salicylici,	. . . . .	5 pts.

This ointment, so to speak, acts very happily in the removal of epidermis, as it causes an increase in desquamation. It did Hebra good service in cases of tylosis, old eczema, and tinea circinata; also in favus.

Another preparation mentioned by Hebra is resorcin ointment:—

R Glycerini sap. (80 per cent.),	. . . . .	90 pts.
Acidi salicylici,	. . . . .	5 pts.
Resorcinae albiss.,	. . . . .	5 pts.

Into the melted base the salicylic acid is first poured and then the resorcin, the latter requiring a lower temperature. Both dissolve entirely. The preparation when cold is white, but later becomes red on the surface. It may be used with excellent effect in psoriasis (or seborrhœa, as Hebra calls it) capitis, acting both as a soap and as an ointment. In sycosis and in eczema, also in superficial mycoses, Hebra has gotten excellent results from the use of this formula.

A saponated glycerin of creasote and salicylic acid used by Hebra is composed of 90 per cent. of the saponated glycerin, with 5 per cent. each of creasote and salicylic acid. He thinks this the best antibacillar remedy that we possess for use over large surfaces. In lupus its effects are surprising.

A saponated glycerin of 80 per cent., with 3 per cent. salicylic acid and 10 per cent. tar, is useful in scaly eczema with severe itching, in pruritus, and as a succedaneum in mycoses.

As an ointment with a neutral base, Hebra uses saponified glycerin (95 per cent.), zinc oxide (5 per cent.), or saponified glycerin (78 per cent.), zinc oxide (20 per cent.), amyli (2 per cent.). The first of these, though hard, melts at the temperature of the skin, and is useful in slight cases of eczema. In severe cases the latter formula is best.

An ointment of 90 per cent. of its base and 10 per cent. of sulphur, and another of 70 per cent. of its base, 10 per cent. oxide of zinc, and 20 per cent. precipitated sulphur, are used by Hebra in acne vulgaris and acne rosacea. These can be

used day and night, and if they arouse too much reaction can be temporarily substituted by oxide-of-zinc ointment.

The saponated glycerin allows of an indefinite addition of iodoform. A 5-per-cent. addition gives excellent results in wounds, ulcers, and fistulæ. It is hard, but upon being applied with a spatula quickly softens, bringing the iodoform in intimate contact with every part. The odor is much diminished.

The following—

R Glycerini sap.,	.	.	.	.	.	.	.	90 per cent.;
Chrysarobinæ,	.	.	.	.	.	.	.	10 per cent.—

acts remarkably well in psoriasis and in mycosis (tinea cruris).

Hydroxylamin in a 1-per-cent. mixture has been used over small areas, particularly in psoriasis of the face, by Hebra. Its advantage is its colorlessness.

Sulpho-ichthyolate of ammonium in 5-per-cent. mixture works well in dry, scaly eczema urticaria, lichen ruber acuminatus and planus, all forms of pruritus, and mycoses.

The following—

R Glycerini sap.,	.	.	.	.	.	.	.	80 per cent.;
Ammon. sulpho-ichthyolatis,	.	.	.	.	.	.	.	10 per cent.;
Zinci oxidi,	.	.	.	.	.	.	.	10 per cent.—

is particularly useful in moist skin diseases.

A 2- and a 3- per cent. carbolized saponified glycerin is an excellent antipruritic and also disinfectant for the surgeon's hands.

In conclusion, I must remark that, although v. Hebra appears to be somewhat too enthusiastic over his new excipient, it is well worth employing, especially in pruritus and as a means of bringing disinfectants in contact with the skin.

*Sulpholeate of Sodium.*—Geo. H. Fox<sup>245</sup><sub>May</sub> says that when sulphuric acid is added slowly to any fixed oil or fat, care being taken to keep the temperature of the mixture below a certain point, a chemical combination is formed, the oleic acid being transformed into what has been called sulpholeic or sulpholeinic acid. If sulphuric acid and castor-oil are thus combined, a clear, thick, yellowish, semi-fluid mass of the nature of a liquid soap is the result. To this is slowly added, with constant stirring, a solution of carbonate of sodium. On standing, this compound separates into two layers, the upper one being the sulpholeate of sodium, a creamy, bland substance containing water, which, when evaporated

sufficiently, leaves a mass resembling vaseline in consistency. This is employed as a base for ointments.

The value of sulpholeate of sodium in the treatment of skin diseases depends upon its miscibility with water, its rapid absorption by the skin, and its remarkable solvent powers. It can be washed off the skin with water. It dissolves, or seems to dissolve, sulphur, chrysarobin, and other drugs heretofore applied to the skin in an undissolved condition, and may be used as an ointment, liniment, or plaster. As a protective, or in acute, sensitive eruptions, it can be used only for carrying medicaments into the skin.

*Carbolized Oil in Scabies.*—Tresilian <sup>245</sup><sub>Apr.5</sub> recommends carbolized oil (1 to 15 of olive-oil) as an application in the treatment of scabies. He has had remarkable success with it in cases where sulphur has failed.

*Petroleum in Scabies.*—Bourgeois <sup>245</sup><sub>Mar.</sub> gives an account of 14 cases of scabies cured by inunctions with petroleum.

*Arsenic Disulphide in Skin Diseases.*—M. Laughlin <sup>81</sup><sub>May</sub> suggests granules containing  $\frac{1}{100}$  grain (0.00065 gramme) of sulphide of arsenic (Realgar) in acne, furunculosis, psoriasis, etc., as a substitute for other forms of arsenic and for sulphide of calcium. He thinks it is tolerated better by the stomach than other preparations of arsenic. He begins with a single granule, and generally increases the dose.

*Menthol in Pruriginous Skin Diseases.*—Dubrevilh <sup>188</sup><sub>Aug.10</sub> recommends 1- to 5- per-cent. menthol in oxide-of-zinc ointment in subacute itching eczema. In severe pruritus, senile and other, a 10-per-cent. solution in almond-oil has proved useful, the effect lasting from half an hour to a day. Sometimes, if used over large surfaces, it causes an intolerable sensation of cold. It cannot be employed with propriety on the mucous membranes nor on abraded surfaces.

*Hydracetic in Psoriasis.*—E. Basch <sup>512</sup><sub>Nov.1</sub> has used this remedy as recommended by Guttman. The patches of psoriasis were but little affected by a ten-day course of rubbing with a 10-per-cent. hydracetic ointment. On the other hand, hæmoglobinuria, hæmatogenic icterus, developed. The pulse was increased from 80 to 120 per minute. The result of similar experiences in 4 cases, related by Basch, leads us to urge hydracetic as a remedy to be avoided in all cases.

*Mercury in Psoriasis.*—At a recent meeting of the British Medical Association, E. D. Mapother <sup>6</sup><sub>Aug. 9</sub> read a paper on the treatment of psoriasis by mercury. The author advances much evidence in favor of the parasitic nature of the disease, and against the supposition that it is hereditary. It is not purely epiphytic, the microbe being distributed with the blood, very often symmetrically. All drugs which have been employed successfully for internal or external treatment have been parasiticides, and mercury is by far the most reliable, relapses being much less frequent after its prolonged administration. Hospital patients he has usually treated by inunctions with mercurial ointment, but in private practice the white precipitate ointment, together with the internal use of blue pill or the proto-iodide, is more suitable. This course was followed for about eight weeks, the eruption having in most instances disappeared about the sixth. For small isolated patches, other local applications were prescribed. A dietary largely non-nitrogenous, the husk of cereals being specially excluded, will limit the supplies for the keratin, which is so profusely formed in the disease.

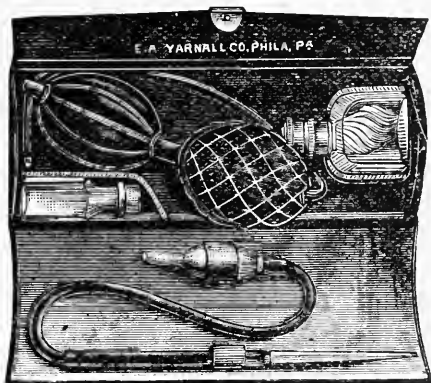
*Ether as a Menstruum in Medication by the Skin.*—Sawyer, <sup>6</sup><sub>July 12</sub> proceeding on the ground that medicinal substances are more readily absorbed when dissolved in ether and painted on the skin, proposes that ethereal tincture of belladonna should be made of the same strength as the linimentum belladonnæ (B. P.), substituting ether for rectified spirits of wine. Sawyer prefers the root instead of belladonna-leaves, because it does not discolor the skin. He also recommends similar preparations of iodine and menthol, the latter 1 drachm to the ounce (3.89 to 31.0 grammes). He uses a brush of glass, so that when clogged it can be dipped into the solution and dissolved off again.

*Antipyrin Internally in Pruritus.*—Blaschko <sup>41</sup><sub>July 21</sub> recommends the internal employment of antipyrin in urticaria, lichen planus, pruritus senilis, “recurrent pemphigus” (Duhring’s disease?), and other pruriginous affections. The dose employed is 8 to 16 grains (0.52 to 1.04 grammes) three times a day.

*Destruction of Tattoo Marks.*—Matignon <sup>188</sup><sub>Mar.</sub> has used with success Variot’s method, which consists in re-tattooing with a strong solution of tannin or of alum. A piece of wood, armed with seven fine needles, half a millimetre apart, is used, and

cocaine injection may be used to allay pain. The series of operations may extend over several weeks.

*A New Caution.*—Unna<sup>824</sup><sub>July</sub> has sought to devise a micro-cautery after Paquelin, of the form devised by Taenzer, for galvanocaustic use. He replaces the benzine bottle of the ordinary Paquelin cautery by a small ball of thick glass, filled with cotton, destined to receive just enough benzine (10 to 20 drops) to last for a sitting of five or ten minutes. This ball is arranged to fit to the rubber tubes of a double blower. One end is larger to receive the drops of benzine; the other, the distal end, smaller, to moderate the amount of fresh benzine delivered. The point of the cautery is to be made small enough to use on the minutest possible areas. The point is of nickel-plated metal, short, and joined to the gum tube by a short glass tube, to prevent overheating. By making the point short and small, an assistant can be dispensed with, the patient himself working the bulb. The accompanying cut will show the appearance of the instrument.



UNNA'S PAQUELIN MICRO-CAUTERY.  
(*Journal des Maladies Cutanées, etc.*).

Unna employs this cautery in *acne rosacea* to destroy the larger veins. He draws the point along the length of the vessels from their roots to the beginning of the finer ramifications. A white hue succeeds the red, and the operation leaves no cicatrix.

*Medicinal Suppuration in Skin Diseases.*—Von Sehlen<sup>50</sup><sub>July 18</sub> accepts the word "pyoforic" for "pyogenic," as suggested by Unna, because this better expresses the active significance of the idea, meaning "pus-forming" instead of "pus-formed." He has experimented to ascertain whether suppuration can be caused without the intervention of "pyoforic" organisms, having examined the pus in a number of artificially-produced dermatitides by microscopic and bacteriological (culture) examinations.

In a case of lupus a 2-per-cent. corrosive-sublimate ointment was used until suppuration was produced. The resulting pus was examined with negative results as to the presence of organisms.

In a case of pruritus hiemalis, repeated applications of tincture of iodine were employed until a suppurative dermatitis was excited, but no micro-organisms could be found in the pus. In other cases pyrogallic acid and chrysarobin were employed to excite a dermatitis, and in some of these bacteria were found.

The macroscopic appearance of chemically-produced pus does not differ from that of bacterial pus. Microscopically, also, the two varieties resemble one another.

Von Sehlen concludes that pus may be formed by chemical irritation only.



# OPHTHALMOLOGY.

By CHARLES A. OLIVER, M.D.,

PHILADELPHIA.

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## SECTION I.

### CONGENITAL ANOMALIES, EMBRYOLOGY, AND HISTOLOGICAL ANATOMY.

Nieden<sup>254</sup><sub>Aug.</sub> describes a case of *anophthalmia cyclopica*, which is remarkable in several respects. No trace of an eye could be found. The fusion of two embryonic bulbs and cavities was intimated only by a perpendicular raphe in the orbit and by a double split in the lower lid. The interpalpebral fissure ran horizontally and was not rhomboidal in form. Its length was twice the normal size. The usual proboscis was wanting entirely, as was any trace of a nose and nasal cavities. This inhibited formation, he believes, is probably responsible for the fusion of the cavities and bulbs. The oral cavity, however, was perfectly formed. The petrous portion of the right temporal bone and corresponding portion of the brain were also imperfectly developed.

Bock<sup>353</sup><sub>Dec., '89</sub> describes a *cyclops monster*, which he believes to be unique from the fact that the organ of sight has not been formed by the conglomeration of two separately-developed eyes, but that it is a single, perfectly-developed eye, the other being wanting altogether. The condition at the base of the skull is very interesting. He regards inflammatory processes in very early fetal life as the cause of the malformation. Daniels<sup>6</sup><sub>Oct., 11</sub> has seen a case of *congenital inclusion of one eye* in a healthy Indian child aged 2 years.

In another extensive treatise, Hess<sup>204</sup><sub>May</sub> continues the subject of the *genesis of microphthalmos*. He believes that all these deformities can be explained on the basis of some failure in the closure of the secondary eye-bladder, excluding inflammatory conditions, of which in his cases there was no sign. He hints at the possibility of the formation of orbital cysts by the strangulation of

scleral cysts, as it were, from their bases. The latter he believes to be produced simply by a stretching of the ocular tunics.

Davidson<sup>2</sup><sub>May 3</sub> reports a case in which the eyes of a man 34 years of age presented the following interesting conditions: The eyeballs were small, the corneæ were 6 millimetres in diameter, and there were *colobomata of the irides and choroids*, located downward and inward. The movements of the globe were defective, both being in a state of habitual convergence and presenting very rapid lateral nystagmus. In the right eye the lens was dislocated downward and inward, lying over the coloboma of the choroid, this being probably the result of a blow. No details of the fundus could be determined.

A peculiar case of *congenital malformation* in the eyes of a young man 26 years old is reported by Chauvel.<sup>173</sup><sub>July</sub> The parents, who were not blood relations, attributed the condition to a maternal impression during pregnancy, caused by the sight of a squinting man. Both corneæ, which were ovoid in outline, with points downward, were 6 millimetres in horizontal diameter by 7 millimetres in the vertical meridian. At the lowest point of the corneal margins there were small pupillary openings, from which the irides radiated; the right pupil was 1 millimetre in vertical diameter, while the left measured but  $\frac{1}{2}$  millimetre. In front of these misplaced pupils the corneæ were hazy. Within the globe posterior polar opacities in the lenses and coloboma of the choroid, with atrophic changes in the fundus, could be seen. With the right eye the patient could see fingers at a foot, while vision in the left eye was limited to the perception of light.

Fricke<sup>353</sup><sub>Feb.</sub> adds another case to the literature of *congenital defects of the eyelids*. The right eye presented a large coloboma of the upper lid and an intimation of one near the internal canthus of the lower lid. In the left eye was seen a small coloboma of the upper lid and a dermoid tumor at the sclero-corneal junction. On each side existed a congenital dermoid-like lipoma in the external canthus. In the same case the author observed keloid tissue marking the former foetal existence of macrostoma. Appendices auriculares and micrognathia also were found. In relation to the etiology of the case, the author inclines to the opinion of Van Doyse, who explains such defects as a result of inhibition of development by amniotic adhesions; but he accepts Nicolin's theory for

those cases which show symmetrical palpebral colobomata. Odillo Maher<sup>267</sup><sub>June 16</sub> reports 4 cases of *iridæmia*, occurring in a brother, sister, and two cousins.

A case of *persistent pupillary membrane*, adherent to the cornea, is reported by Zirm,<sup>353</sup><sub>July</sub> who accepts for its explanation Samelsohn's theory of intra-uterine corneal perforation and temporary collapse of the anterior chamber.

A case of persistent pupillary membrane, where the fibres were attached to a web-shaped opacity in the anterior capsule of the lens, has been seen by F. P. Smith.<sup>849</sup><sub>June</sub>

Page<sup>70</sup><sub>Feb. 2</sub> reports a case of *binocular coloboma of the iris*, situated in the upper and outer portion in the left eye and in the upper and inner portion in the fellow-eye. The crystalline lenses were almost spherical in shape. Ophthalmoscopic examination through the coloboma showed the want of the ciliary processes as far as could be seen, which fact made the author think it probable that they were absent in the portions where the iris remained intact. To the elaborate study of the congenital anomalies of the iris lately published by Frank,<sup>353</sup><sub>Aug., '89</sub> Günsburg<sup>353</sup><sub>May</sub> adds an interesting case. In studying a case of double congenital lateral coloboma of the iris, Plange<sup>254</sup><sub>Mar.</sub> reaches the following important conclusions: 1. There is no hereditary tendency to this defect. 2. The peculiar structure of the iris in lateral coloboma, as described in his case, occurs with striking regularity. 3. Remains of the pupillary membrane are rarely seen in the typical coloboma extending downward, while they are observed with comparative frequency in the lateral variety (about 50 per cent.). 4. The lateral coloboma is most satisfactorily explained by anomalies in the pupillary membrane, *i.e.*, the tunica vasculosa lentis of the embryonal eye. If the iris, in the process of insinuating itself between cornea and lens, and of pushing before it and constricting the anterior part of the embryonal lenticular sac, meets with abnormal resistance in the latter (from local causes), anomalies of the pupillary membrane and coloboma of the iris are likely to result. Seggel<sup>353</sup><sub>Aug.</sub> describes a case of coloboma of the iris and choroid with persistent remains of pupillary membrane, together with 2 other cases, in which the latter anomaly alone existed.

Cissel<sup>353</sup><sub>Aug.</sub> describes a case of *peripheral symmetrical defect in both* lenses in the lower border, without coloboma of iris or choroid.

The author believes the defect to have originated in a faulty development of the fibres in the third period of development of the lens, and to have been aggravated by lack of growth at that point during the fourth (extra-uterine) period.

Talko <sup>78</sup><sub>Aug.31</sub> describes a case of *coloboma of the choroid* in both eyes, without abnormality of the irides, which he regards as exceptional.

In an exhaustive study of 12 cases of so-called *extra-papillary colobomata*, G. Lindsay Johnson <sup>249</sup><sub>Jan</sub> arrives at the following very interesting conclusion, which we quote *verbatim*: "The cases published herewith will, I believe, already suffice to demonstrate that extra-papillary colobomata are not of as rare an occurrence as have been hitherto supposed, and I may add that whilst writing this paper I have observed several other cases, which only confirm what I have herein stated. I believe it will be found that they are not difficult to diagnose, and that, with the exception of those cases which include the macula, they do not impair the vision beyond causing a limitation of the field (unless they are so large as to weaken the resistance of the globe). If I may suggest some explanation of this evidently congenital defect, I think, as I have above indicated, that we are in the presence of something which presents many points in common with cutaneous naevi. 1. The eye, although a highly differentiated nerve end-organ, is nevertheless essentially a skin-formation, while the choroid presents an analogy to the corium from its position, from its mesoblastic development, and from its affording nourishment to a directly-superimposed layer of epiblastic pigment-cells. 2. Wherever an agglomeration of choroidal vessels exists, we find it below the retinal pigment-layer, which forms a net-work over it. 3. The vessels forming the agglomeration are so fused together as to be indistinguishable and to completely hide the sclerotic beneath. 4. The absence of this dense structure in some of the cases can be explained by the analogous occurrence of the altered condition of the skin, where naevi have disappeared and become absorbed, and I think it is not altogether unreasonable to suppose that the mother-of-pearl-like sheen and peculiar glistening tissue which may be seen spreading over the base of some of the colobomata where this vascular mass is absent is merely the connective-tissue cicatrix of an atrophied naevus. 5. Cutaneous naevi are universally admitted to

be congenital formations, and where they occur we find an increase of the pigment-cells over them. Colobomata are likewise recognized as congenital formations, and the extra-papillary forms, at least, are conspicuous by the pigment-clusters which surround and cover them. Even had ocular nævi never been recorded, I hardly think it would be possible to come to any other conclusion, after examining the cases which form the subject of this paper, than that the peculiar choroidal structure in the centre of certain of these colobomata is of the nature of a nævus. 6. It seems difficult to explain most of these malformations in any other manner, as in no case could any history be obtained, either directly or indirectly, of syphilis; nor could I in any case (except, perhaps, one) obtain the slightest evidence that any inflammation had occurred inside the womb during pregnancy, or that the mother had had any fever whatever. Moreover, the lesions have all the appearance of having a congenital origin, and occurring, as they do, in every part of the field, cannot possibly arise from any foetal cleft; besides, the well-known papillary colobomata, whether limited to the sheath of the optic nerve or passing downward toward the iris, differ, as a rule, very materially in structure from the extra-papillary colobomata which form the subject of this paper."

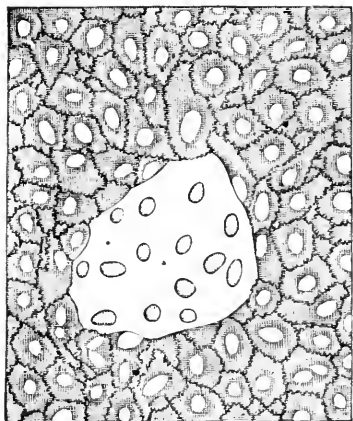
Two instances of *coloboma of the optic-nerve sheath* and one of coloboma of the choroid are recorded by Norton.<sup>776</sup> Weyert<sup>553</sup> Aug. has seen individuals of three generations of one family in whom coloboma of the optic nerve was found; an observation which he thinks establishes the fact of heredity in this abnormality. The tendency to return to normality was manifested by decrease in the defect in the younger generations.

A. Thomson<sup>277</sup> Apr. gives a study of "the *orbito-maxillary frontal suture in man and the apes*, with notes on the varieties of the *human lachrymal bone*." Leopold Weiss<sup>254</sup> Dec., '89 has devised an *apparatus for the measurement of the angle of inclination of the orbital cavity*, and gives the results of its use in a series of interesting tables. Stilling,<sup>254</sup> Aug. after numerous measurements to determine the *development of the orbits and their relation to refraction*, comes to results widely different from those of Weiss. He finds that the orbits become a little higher in those with long faces, and that broad orbits are always associated with broad faces.

In an exhaustive monograph on "*persistent remains of the*

*fœtal hyaloid artery*," De Beck<sup>1069</sup><sub>Oct.</sub> gives a review of the literature of the subject. He has collected 199 cases, which he carefully describes; 118 of these are examples of the persistent vessel or canal; 68 are instances of remnants at the disk,—shreds, membranes, cysts, or clumps; whilst 23 are merely notings of remnants of the posterior surface of the lens alone,—capsular cataracts or striæ. This large grouping of well-established instances in association with an exhaustive bibliography makes the paper an extremely valuable contribution to those who are interested in the subject.

Duncan<sup>277</sup><sub>July</sub> gives an easy and valuable method of *dissecting the eyeball*. Nuel and Cornil<sup>274</sup><sub>July, Aug.</sub> present a very elaborate study of the *endothelium of the anterior chamber* of the eye at varying



STOMATA OF THE IRIS.  
(Archives d'Ophthalmologie.)

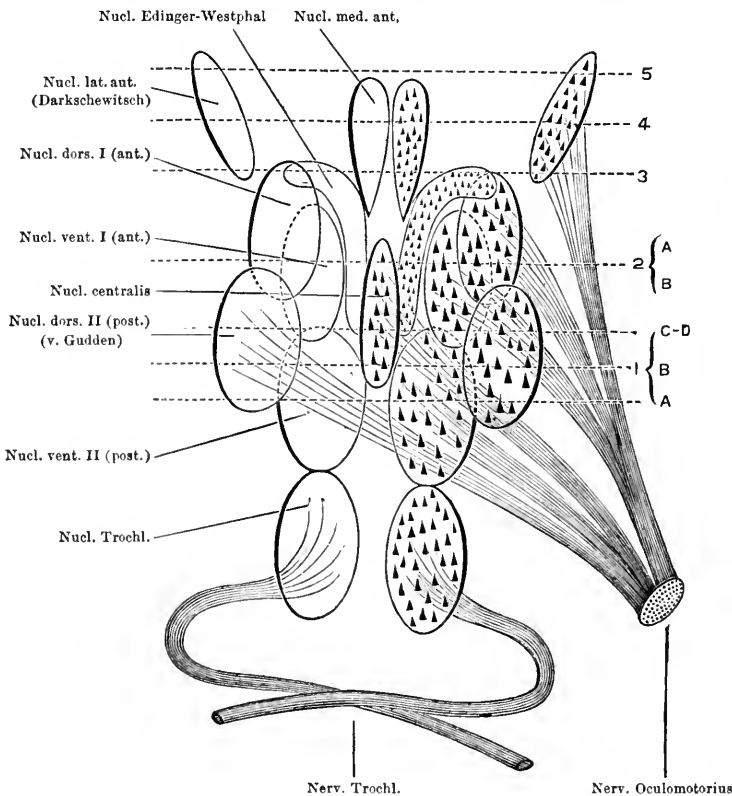
periods after removal from the living animal. Experiments made to show the reaction of the endothelial cells toward various liquids injected into the anterior chamber demonstrated clearly that water and all liquids were destructive, excepting solutions of chloride of sodium and of boric acid (4 per cent.) Solutions of mercuric salts, in any proportions capable of acting as antiseptics, were rapidly destructive to this layer. By the fifth day, however, the dead cells were replaced by a new and complete endothelial membrane. As a

consequence of this observation, the authors assert that in cataract extractions intra-ocular lavage, as generally practiced, acts not as an antiseptic application, but simply as a mechanical means of removing cortical *débris*; and that for this purpose boric acid (4 per cent.) is the only solution that should be injected into the anterior chamber. Solutions of eserine or atropine, to be employed after operation, should be made with a solution of chloride of sodium equal to that found normally in the aqueous. Their paper ends with a description of *stomata in the anterior face of the iris*, the discovery of which they claim is original with them. The accompanying cut gives an excellent idea of the disposition and arrangement of these stomata.

Nicati,<sup>3</sup><sub>Feb.5</sub> as the result of some experiments, concludes that the *aqueous humor* is derived from the capillaries throughout the whole extent of the choroid, and not alone from the vessels of the ciliary processes. He defines a double membranous sac, limited within by the vitreous lamina of Bruch and without by the intervascular layer of Sattler, which envelops this chorio-capillary zone from the optic nerve to the attachment of the iris. In reply to the criticisms of Snellen regarding his original study of the *concavity of the zone of Zinn*, Schoen<sup>254</sup><sub>Dec., '79</sub> asserts that his critic has been misled by the results of Straub, whose conclusions are based upon oblique, and not meridional, sections of a cone. In his turn, Straub<sup>254</sup><sub>Apr.</sub> re-affirms his conclusions and asserts that the anterior leaf of the zonule is not a perfectly conical mantle, but forms many folds, giving in meridional sections a straight line, while obliquely the sections are concave outward.

Boucheron<sup>173</sup><sub>May</sub> has demonstrated that the *ciliary nerves*, after perforating the sclerotic, form an arborescent net-work in the region of the sclero-corneal junction, where they anastomose with minute filaments from the circumference of the orbit. He believes it is to the latter filaments that the preservation of corneal sensibility is due, after section of the ciliary nerves. Pfister<sup>204</sup><sub>May 23</sub> compares with his own studies the results of other investigators touching the size and form of *intervaginal space of the optic nerve* within the optic canal. The following facts seem proved: There invariably exists an extensive communication between the subdural space of the brain and the intervaginal space of the nerve within the optic canal. In a series of the author's specimens, the space between dura and pia extended all around the optic nerve and was only traversed by slender trabeculæ of connective tissue. A clearly-marked arachnoid membrane was not found in any of the specimens. The dura is strongly developed, especially below the nerve, and the superior ophthalmic artery is imbedded in it. From pathologico-histological examinations, Delbrück<sup>368</sup><sub>V.21, No.3</sub> concludes that the direct *fibres of the optic nerve* run laterally, joined in thick bundles. In the chiasm and tract they gradually blend with the crossed fibres; not, however, spreading themselves uniformly over the whole transverse section, but leaving, for a certain distance, the internal and inferior, and, later, the external and inferior, portions free.

According to Bernheimer,<sup>78</sup><sub>AUG. 31</sub> the *medullary sheaths of the fibres of the optic tract* beyond the optic thalamus follow the same law of development as governs the formation of the peripheral portion: they do not appear before the twentieth or twenty-first week of embryonal life. Moreover, he asserts that one of the roots of the optic tract takes its origin in the corpus geniculatum.



SCHEME OF THE OCULOMOTORIUS CENTRE.  
(Graefe's Archives.)

and does not merely pass through that body, as has been maintained.

From a large series of sections of the brains of lower animals and the human foetus and infant, Perlia<sup>204</sup><sub>Dec., '89</sub> describes the *anatomy of the oculo-motor centre*. The accompanying wood-cut gives a diagrammatic picture of the associated nuclei of the third nerve, as demonstrated in his sections, agreeing in all essential points with the diagram of Edinger. This congeries of nuclei, he states, is roughly triangular in form, with the base upward, and is situated



in the floor of the aqueduct of Sylvius, just anterior to the nucleus of the trochlear nerve. The physiological relations of these nuclei are not touched upon by the author.

#### PHYSIOLOGY.

Mlle. Wanda de Sczawinska<sup>173</sup><sub>Oct.</sub> makes an interesting contribution to the study of the *eyes of some crustaceans*, with experimental researches upon the movements of the pigment-granules and pigmentary cells under the influence of light and shade in the eyes of crustaceans and arachnidians.

Sulzer<sup>78</sup><sub>Aug. 31</sub> asserts that the results of ophthalmometry are not exact, except when the *angle  $\alpha$*  is reduced to zero by the coincidence of the visual line with the optic axis of the cornea. He gives rules by which this angle may be rapidly estimated by means of Javal's ophthalmometer. In examining the *visual field*, Bjerrum<sup>78</sup><sub>Aug. 31</sub> employs not only an object of 1 centimetre in diameter at a distance of 30 centimetres (visual angle about  $2^\circ$ ), but also one of 6 to 3 millimetres in diameter at a distance of 2 metres (angle of 10 to 5 minutes). By this means he often finds in disseminated choroiditis annular scotomata which have escaped detection by the ordinary method. In pigmentary retinitis, the field is found concentrically contracted. From observations by this method he asserts that in glaucoma the optic papilla is the point of departure of alterations of the field.

Prentice<sup>204</sup><sub>Jan.</sub> gives us a new *metric system of numbering and measuring prisms*. This system is based upon a novel method of designating prisms by their linear amplitudes of deflection (instead of by the refracting angle), which are the tangents to the angles of refracted deviation; and, to place the nomenclature of prisms on the same basis of scientific exactness as other ophthalmoscopic refracting appliances, the metre has been chosen as the distance (from the prism) of the plane in which the suggested unit-deflection (1 centimetre), the so-called "prism-dioptry," is measured. Prisms which produce this unit-deflection at  $\frac{1}{2}$ ,  $\frac{1}{3}$ , or  $\frac{1}{4}$  metre, will effect twice, three, or four times this deflection at the metre-plane, and are therefore designated as two, three, or four dioptry prisms. He says that it is consequently obvious that "the prismatic refraction is in the inverse proportion to the distance at which the unit-deflection is produced, being in harmony with the refraction of

lenses, which is in the inverse proportion to the distances at which the images are formed." The prisms will have the advantage of being readily verified in the consultation-room, by merely noting the apparent change in the position of a suitably-placed object on the wall,—say, at a distance of 6 metres,—viewed against a scale where divisions are increased to the necessary proportion—6 centimetres. He asserts that the mechanical difficulties in the process of manufacture with which the opticians would have to contend in producing prisms of fixed intervals of deflection are also avoided by this system, as he believes it is conclusively shown that fractional parts of prism-dioptres can be utilized, and are essential to the requirements of each individual by reason of the variability of the metre-angle, which depends solely upon his pupillary distance. The relation which is shown to exist between the metre-angle and the prism-dioptry is indicated by the following rule, which reduces calculation to an unprecedented exactness and simplicity: "Read the patient's pupillary distance in centimetres, when half of it will indicate the prism-dioptry required to substitute one metre-angle for each eye."

E. Jackson<sup>76</sup><sub>June</sub> compares the method for *numbering and measuring prisms* advocated by Dennett with that suggested by Prentice, and states that the units proposed by these authors are very nearly identical, and that, "for the small deviations caused by the prisms most used in practice, they may be regarded as identical;" he says that "for large angles the difference is great, and decidedly in favor of the angular unit, as against the tangential, the use of the angular units to indicate divergencies being almost universal." He believes that "the strong point for such a unit is that it entails so little change in the numbers already used to designate prisms, and that it is practically putting our present numbering on a definite scientific basis of refractive power." Landolt,<sup>78</sup><sub>Aug. 31</sub> our corresponding editor in Paris, France, adopting the proposition of Jackson, proposes to number prisms by their angle of minimum deviation, while Burnett<sup>78</sup><sub>Aug. 31</sub> advocates a metrical system of numeration founded on the deviation of the luminous ray measured at the distance of a metre.

In reply to the criticisms upon his study of "*the factors of convergence*," Alfred Graefe<sup>204</sup><sub>Dec., '89</sub> describes his method of experiment, and re-asserts that, irrespective of the tendency to accommodation, there is a factor through which the excluded eye tends to turn its

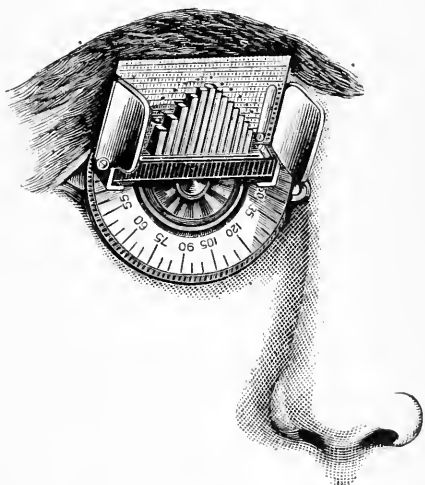
visual axis upon the object. This he explains by the assumption that a common centre of communication for the two interni has been established by habit and education.

Basevi<sup>254</sup><sub>Aug.</sub> describes two very small "*negative physiological scotomata*," which uniformly were observed in about the same part of the field in a number of perimetric measurements. They were surrounded by relative chromatic scotomata. Their distance from Mariotte's spot and the point of fixation varied somewhat with the state of refraction, being greater in the hypermetrope and less in the myope than that found to be quite constant in the emmetrope. Both spots are situated in the upper half of the retina.

Concerning the cause of the apparently shorter length of the inferior of two perpendicular double images, Sachs<sup>204</sup><sub>May 23</sub> believes that two factors are active: 1. The impulse based on experience to locate the lower image in the horopter on account of the non-appearance of two separate images. 2. The physiological convergence on looking downward, with which accommodation goes hand in hand.

Laska<sup>182</sup><sub>June 20</sub> supplements Müller-Lyer's article on *optic delusions and illusions* by giving several new instances, some of which stand in apparent contradiction to Müller-Lyer's results. Prompt<sup>410</sup><sub>Jan.</sub> makes some remarks upon the *sensation of relief*, suggested by some interesting and curious optical illusions.

By means of an ingenious instrument invented by his pupil, Moussié, Meyer<sup>78</sup><sub>Dec., '29</sub> has been enabled to measure and record the curvature in any desired meridian of *the cornea and sclerotic of the living eye*. A series of vertical pins of equal length, free to move in the direction of their long axes, are applied by their bases to the cocainized conjunctiva. The curve made by their upper extremities, which is the counterpart of the curved meridian upon which their bases rest, can be traced out upon an upright card,



MOUSSIÉ'S INSTRUMENT TO MEASURE THE CORNEA AND SCLEROTIC.  
(*Revue Générale d'Ophthalmologie.*)

He finds certain depressions in the sclerotic corresponding, on the one hand, to the flattenings which have been long ago observed in the marginal zone of the cornea, and, upon the other, to the point of insertion of the recti muscles. Eyes strongly hypermetropic exhibit the greatest curvature at the equator, while highly myopic eyes show the reverse of this. In astigmatic eyes the sub-equatorial depressions correspond in amount, as in direction, with the axes of corneal astigmatism. The highest degrees of astigmatism are found in eyes which show the most pronounced curvature at the equator. He is strongly convinced of the influence which muscular action exerts upon the form of the globe and the state of refraction which results from this, the other factors being the elasticity and the resistance of the sclerotic.

Uthoff<sup>204</sup><sub>May 23</sub> has made further investigations regarding the *dependency of visual acuteness upon the intensity as well as the wavelength in the spectrum*. He makes several interesting groupings and illustrates his results with valuable tables of equivalents, especially for the behavior of visual acuteness in different parts of the spectrum obtained through the same width of fissure in interposing diaphragms. Laqueur,<sup>204</sup><sub>May</sub> in a most interesting communication, proposes the name "*pseudentoptic*" vision for the entoptic perception of extra-ocular objects. Rider<sup>59</sup><sub>Aug. 9</sub> endeavors to establish a connection between the *visual acuity and the ability to close one eye independently of the other*, he having found that most persons having the same acuity of vision in each eye could wink with either eye; while, if inequality of vision existed, the poorer eye, in the vast majority of cases, was the one that was employed in winking.

Schirmer<sup>78</sup><sub>Aug.</sub> asserts that in *albinos* the *perception of light* and of difference in its intensity does not vary from that of normal individuals, except in strong intensities. In his opinion, each alteration of the pigmentary layer of the retina causes a diminution of its adaptability. He maintains that the "luminous sense" of hemeralopes is normal, the "adaptation only being diminished." This conclusion is denied by Uthoff,<sup>78</sup><sub>Aug.</sub> who argues that if adaptation were diminished, a hemeralope should see better after a sojourn in a dark room, which, he observes, is not the fact.

As a modification of the method brought forward by Bellarminoff, Koller<sup>317</sup><sub>July</sub> suggests for *examination of the fundus of the living eye* the use of glass shells having a "plano-concave-meniscus"

form. This optical device is inserted into the previously anesthetized conjunctival sac. The image of the fundus, as observed through this lens, is diminished in size in the ratio of 9 to 10. The author thinks that the method might be of use "for deter-



LANDOLT'S TEST-TYPES.  
(*Corresponding Editor's Report.*)

mining the location of echinococci, foreign bodies, or obscuring membranes in the vitreous (provided the lens is transparent and the pupil can be dilated).

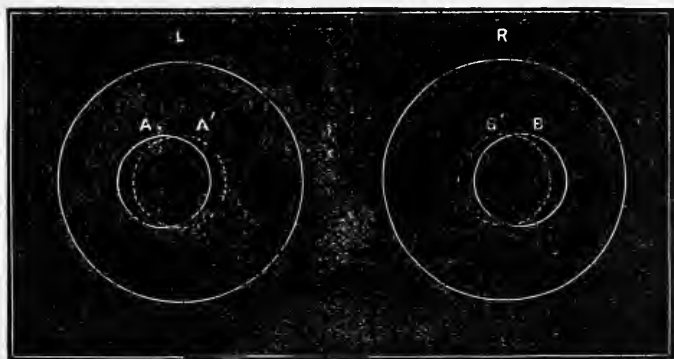
Landolt, of Paris, corresponding editor, sends a description of his test-types, with a plate, which is here reproduced. They are

based upon Snellen's principle and are arranged for a constant distance of 5 metres. Instead, however, of being limited to a visual acuity from  $V=0.1$  to  $V=1$ , three additional series are added corresponding to  $V=1.25$ ,  $1.5$ , and  $2$ .; and to make the types more applicable each group contains a figure. Surmounting the chart of test-letters is a half-circle of radiating lines for the determination of astigmatism. In order to obviate the serious inconvenience of varying illumination, these test-types are executed upon a kind of porcelain ("sand-blast process"), which can be washed, and in which the white of the ground and the black of the letters are perfectly pure and permanent in character. A decided advantage, moreover, is that the translucency of the material permits these types to be illuminated as well from behind as from in front.

De Lapersonne<sup>173</sup><sub>May</sub> concludes, from a study of certain cases of *mydriasis due to irritation of the sympathetic nerve*, that the phenomenon is caused by inhibition of the circular fibres of the iris. He regards the existence of a dilating muscle as extremely improbable. In refutation of this theory, Meyer<sup>173</sup><sub>May</sub> asks how he can explain the fact that the mydriasis of complete paralysis of the third nerve can be markedly increased by the action of atropine.

As a *test for binocular vision*, Lippincott<sup>1</sup><sub>Sept.27</sub> suggests the placing of a spherical or cylindrical glass before one eye, the result of which is to produce metamorphopsia if binocular vision exists; he having found that: "1. A + spherical placed before one eye makes the corresponding side of a rectangle appear higher than the other side. 2. A — spherical makes the corresponding side appear lower. 3. A + cyl., vertical, *increases*, whereas a + cyl., horizontal, lessens the apparent height of the corresponding side. 4. A — cyl., vertical, lessens, whereas a — cyl., horizontal, increases the apparent height of the corresponding side. 5. A + cyl., axis pointing upward and outward, before either (and still more decidedly before each) eye, makes the top of a rectangle appear narrower than the bottom, while, if the axis point upward and inward, the top appears wider. 6. — cylinders, axes upward and outward, increase, whereas those with axes pointing upward and inward lessen the apparent relative width of the top. 7. Binocular vision is necessary for the production of optical metamorphopsia. Hence, the lens must not be so strong as to make the image sufficiently blurred to be incapable of fusion with that formed by the other eye,

for in that case the blurred image is suppressed mentally, and monocular vision thus practically established." In application of the test, he employs a cylinder  $+2$  D., with the axis held vertically before one eye, while the patient looks at a 12-inch square card, held at the ordinary reading distance. As control tests a minus cylinder is substituted, and the direction of the axis is varied. As a test for binocular vision, Berry<sup>76</sup><sub>Apr.</sub> suggests the use of the stereoscopic phenomena resulting from simultaneously altering "the pictures presented to either eye, so that the impression given also varies." When, in the accompanying cut, the small circles occupy the positions A and B, respectively, the stereoscopic impression is that of a hollow cone, with the small circle at the distal extremity; when the small circles are made to come into the position of A'



BERRY'S TEST FOR BINOCULAR VISION.  
(*Ophthalmic Review.*)

and B', the cone appears closer with the lesser circles at the proximal end. He says that if all the stages of transition between these two positions be presented to the eyes, the stereoscopic effect is one of movement in the third dimension, the small circle rising from a plane lower to one which is nearer the eyes. From the coincidence that the pigment contained in the hexagonal cells of the retina is "the only element which is at all regularly distributed over the whole extent of the retina," and that perception of light is the only function which is pretty much the same, whatever be the portion which is stimulated, Berry<sup>76</sup><sub>May</sub> infers that the pigment is the main, if not the only, end-organ for that sense, this view being strengthened by the fact that all disturbances of retinal pigment interfere more or less with the perfection of the light sense. The author,

further, suggests that the rods are the end-organs of projection, and of movements started in the interest of fixation.

The interesting experiments of Fick and Güber<sup>204</sup><sub>Aug. 29</sub> lead them to the conclusion that the *retinal circulation* is promoted by the movements of the globe and the lids, and also by accommodation, and that these three factors prevent an evenly progressive fatigue of the retina during day-time by allowing it to recover itself. They also believe that the promotion of the circulation in the retinal blood-vessels and lymph-channels is the active means of producing this recovery. Their theory is based on the supposition that the phenomena of fatigue proceed from the retina, and not from the cerebrum, the weight of testimony being in favor of the former.

Doyon<sup>410</sup><sub>Oct.</sub> finds that *section of the cervical sympathetic* in dogs and cats is not followed by dilatation of the retinal vessels; sometimes even contraction occurs, because, as Dastre and Morat have shown, the great sympathetic is an ensemble of nerve-fibres of two opposite kinds—vaso-dilators and vaso-constrictors. The action of any particular branch he believes is the resultant of the two opposing forces, which is determined by the preponderance of fibres of constriction or dilatation in the composition of this nerve. Excitation of the cephalic end of the divided nerve, he asserts, causes marked dilatation of the retinal vessels; while the same effect is produced by asphyxia. If, on the other hand, the nerve be first cut and then asphyxia induced, he has observed that dilatation of these vessels still takes place, but is apparently less in degree than before section. From these results the author concludes that the cervical sympathetic is only one factor in dilating the vessels of the retina, and that it is aided by vaso-dilator fibres of bulbar origin coming through some other channel.

Osten-Sacken<sup>21</sup><sub>June 30</sub> adheres to the view that the *physiological pulsation of the veins at the disk* is due to rhythmical differences in pressure in the cavernous sinuses, and adduces as another cause the fact that the veins, in their extra-ocular part, are under much less external pressure than those in the intra-ocular portion, which are subjected to intra-ocular tension. The pathological propagation of the pulse-wave in the veins he calls “progressive peripheral pulsation of the retinal veins.” In his extensive studies of this condition, in connection with cardiac disease and arterio-



sclerosis, he found in all cases of aortic insufficiency, as well as in the vast majority of cases of arterio-sclerosis, that the phenomenon was present. He believes that in these cases the pulse-waves reach abnormally too far, extending from the arteries through the capillaries into the veins themselves.

In a series of experiments upon dogs, in which he irritated the *visual arcæ*s (Munk) in the cerebral cortex and noticed the effects upon the movements of the eyeball, Obregia<sup>182</sup><sub>June 20</sub> comes to the same conclusions regarding the relation of the retina and the cortical area for vision, with the boundaries of the latter, as Munk has obtained by his method of extirpation. He believes that the numerous differences in the movements evoked from the area of vision and the centre for the muscles of the eyeball evince a difference between these centres. Upon irritation of the posterior and anterior portion of the centre for vision, movements of the eyeball upward and downward followed.

These movements are considered reflex through associated fibres. By stimulation of different portions of the cortical centre for vision a "scheme" analogous to that of Munk was formulated.

Grandclément,<sup>211</sup><sub>Mar. 30</sub> has observed 4 cases of essential paralysis of convergence coming on in school-children about the age of puberty. One of his patients was under observation for eight years, and was obliged to wear prisms of 6° combined with convex spherical lenses of 14 (*sic*) dioptries. Owing to timidity this patient refused operative interference. At the age of 18 years the symptoms began to disappear and at 20 his convergent power was fully restored and his glasses dispensed with. Grandclément agrees with Parinaud in believing in the existence of a *special centre of innervation presiding over the function of convergence*, and draws attention to the researches of Mendel, of Berlin, upon the phenomena of the Argyll Robertson pupil, which seem to prove that the pupillary light-reflex depends upon the integrity of a centre situated in front of the tubercula quadrigemina and communicating with the common nucleus of the oculo-motor nerves.

Dor<sup>211</sup><sub>Apr. 13</sub> reports the case of a young man 24 years of age who presented, as a sequel to influenza, monocular mydriasis with the symptom of Argyll Robertson pupil. In good light the right pupil measured 4.5 millimetres, while the left had a diameter of 6 millimetres; this without any manifest anisometropia. Under direct

illumination of the left eye this dilatation remained unchanged, or was even increased by oblique light; but when the right iris was subjected to the same amount of direct illumination the fellow-pupil was found to contract promptly and equally, so that both now were of the same diameter. In convergence and accommodation the left pupil contracted in accord with the right. The chief interest in this case lies in the question of localization of a lesion which could produce this symptom. According to the recent experiments of Gudden and of Mendel on animals, it seems probable that the *centre for the movements of the iris* is in the "*ganglion de l'habenula*" of the same side. Mendel, moreover, has demonstrated, in the rabbit, dog, and cat, that these two ganglia are connected by a transverse commissure, which forms the inferior part of the posterior commissure,—a fact that would serve to explain the simultaneous reaction of the two pupils. He says that the path of the reflex would therefore be: retina, optic nerve, optic tract, ganglion of the habenula of the same side, posterior commissure, nucleus of Gudden (external geniculate body), oculo-motor nerve, and sphincter of the iris. Whether this is the pathway in the human brain is still an unsettled question. In Dor's case the supposition of a localized lesion in the ganglion of the habenula of the left side, with integrity of the commissure and ganglion of the opposite side, would, in view of these facts, perfectly explain to the author's mind the insensibility of the left iris to direct light stimulation, while at the same time reflex excitation through the right pathway would be promptly answered by both irides.

Förster <sup>201</sup><sub>MAY 23</sub> reports an extremely interesting case of bilateral hemianopsia, which leads him to the following conclusions: 1. The deviation of the line of limitation toward the defective half, so frequently observed in homogeneous hemianopsia, does not arise from a mixing of the elements of both optic tracts in the retina, but from a peculiarly favorable blood-supply of that area in the occipital lobe corresponding to the area of greatest visual acuteness. 2. Bilateral hemianopsia is not necessarily connected with complete disappearance of the functions in both halves of the visual field of the two eyes. 3. The cortex of the occipital lobes dominates the topographical ideas, no matter whether they be acquired through the visual or tactile senses, through the con-

sciousness of certain muscular movements, or through description. 4. Integrity of function of a small area in the cortex does not suffice for the distinction of colors. This latter disappears earlier in disturbed nutrition of the cortical elements than perception of the form of very small letters. 5. Destruction of the cortex of the occipital lobe does not cause atrophy of the optic nerves. Déjerine, with the collaboration of Sollier and Auscher,<sup>410</sup><sub>Jan.</sub> has minutely studied the brains of two subjects who had presented homonymous hemianopsia. The first case, which showed the left lateral variety of defect, presented symptoms of left-sided choreiform movements. The second, which was of the opposite type, was more complicated in character (rotation of the head to the left and diminution of the muscular sense in the right upper extremity, with visual and auditory hallucinations). Whilst from their combined studies the authors agree that it is necessary to locate the *cortical centre of vision* in the occipital lobe, and particularly in the cuneus, they believe, on the other hand, that the point of origin of the optic radiations of Gratiolet should be located at the extreme posterior point of the occipital lobe, as they found demonstrated in their 2 cases.

Mott and Schaefer,<sup>47</sup><sub>Summer</sub> in their experiments upon the *associated eye movements* which result from cortical faradization, state that the general results obtained from unilateral faradization of the head and eye area in *Callithrix* show that, "as regards conjugate deviation of the eyes, this area may be regarded as consisting of three zones, viz.: 1. A middle zone, immediately below the horizontal part of the pre-central sulcus, faradization of which is followed by simple, lateral deviation, well-marked, without either upward or downward inclination. 2. An upper zone immediately above this, which may extend to and include part of the marginal gyrus, giving on faradization downward inclination, usually combined with lateral deviation. 3. A lower zone immediately below the middle one, and sometimes extending nearly to the lower margin of the hemisphere, which gives upward inclination, usually also combined with lateral deviation." In the experiments to determine the effects of bilateral faradization of the frontal cortex, they show that the main result of equal simultaneous bilateral excitation of points, which when unilaterally excited caused simple conjugate lateral deviation, is to produce visual fixation, without any tendency to

lateral deviation. The results obtained from bilateral excitation of the occipital lobes are in all respects comparable to those yielded by a stimulation of the frontal area. They find that the effects of simultaneous excitation of the occipital visual area of the one hemisphere and of the frontal area of the other hemisphere is a preponderating action of the frontal cortex, so that a simple effect of lateral deviation is obtained, the same as would be produced by excitation of that frontal centre alone.

Phillips<sup>59</sup><sub>Mar. 8</sub> has constructed a useful *working model of the eye*, which practically consists of a telescopic box so arranged with diagrams and test-lenses as to enable any form of ametropia to be studied at will.

#### COLOR PERCEPTION.

Hering,<sup>204</sup><sub>Dec., '89</sub> after raising objections to the hypotheses of Helmholtz and Fick, refutes their theories advanced to explain the *peripheral color perception*. He bases his deductions upon his own experience and on Carl Hess's work. He turns then to criticise Helmholtz's new psychical theory, and finally comes to the conclusion that the theory of the complementary colors alone is sufficient to explain all phenomena. Carl Hess,<sup>204</sup><sub>May 23</sub> joins Hering in making another attack against the Young-Helmholtz theory. This time the subject of investigation is limited to the *changes in tone of the spectral colors in consequence of fatigue of the retina by homogeneous lights*. From his experiments he believes that all lights must change their place in the color-triangle for the tired retinal area, and that they shift from the place of the tiring color toward the place of the counter- (complementary-) color.

Charpentier<sup>274</sup><sub>Mar. to Oct.</sub> continues his exhaustive studies upon the influence of colored impressions upon the peripheral and macular portions of the retina, giving mathematical formulæ and results of numerous experiments with apparatus especially contrived for the regulation of strength of the color intensity and the length of duration of luminous impression.

In *color-testing for railway purposes* Lediard,<sup>6</sup><sub>Nov. 23, '89</sub> employs color-circles arranged on a movable disk, which allows of their being brought successively between the individual examined and a light. In a study of the deviations from normal color sensation, Lucanus<sup>254</sup><sub>Dec., '99</sub> reaches conclusions generally in accord with those of Knies. He holds with this author that the transition from normal

color perception to typical color-blindness is first noticed in a decreasing ability to recognize violet; red follows, but to a less degree, while blue and yellow remain normal. This condition he terms color-weakness.

Hering<sup>204</sup><sub>Oct.23</sub> publishes his experiments regarding *monolateral disturbances of color perception*, which give the following results: 1. All colors appear to the affected eye less saturated, *i.e.*, have a more white or grayish tone. 2. Yellow and blue suffer no change of tone, but appear less saturated. 3. Green and red near in tone to the respective original colors appear colorless. 4. The intermediate colors, spectral red, orange, yellowish green, and a violet of moderate saturation, lose their red and green tone, and appear as a pale whitish or grayish blue and yellow. The methods of examination in these experiments are detailed by Carl Hess.<sup>204</sup><sub>Oct.23</sub>

Edridge Green<sup>6</sup><sub>Aug.9</sub> arranges the causes of color-blindness into three classes: "1. Color defects due to absorption of certain rays by the media of the eye. 2. Color defects due to non-excitability of the visual substance of the optic nerve-fibre by rays of light of a certain wave-length. 3. Color defects due to pathological conditions. 4. Color defects due to imperfection of the color-perceiving centre." For facilitating the *diagnosis of color-blindness*, Hering<sup>204</sup><sub>May</sub> has constructed an apparatus, the principal advantage of which is that the saturation of the colors can be regulated in such a manner that the color-blind person cannot notice a difference in the respective colors by a difference in the intensity. He says that the apparatus can be used only in cases of absolute red-green blindness, and that in conditions of acquired color-blindness or of imperfect color-sense it is not applicable. In testing for color-blindness, Libbrecht<sup>78</sup><sub>Aug.</sub> uses a disk with sixteen equal openings containing three pattern colors and thirteen confusion colors, the whole made to revolve before a single opening behind which a candle furnishes the necessary illumination. As evidence of the faultiness of the method employed for testing railway servants, St. Clair Buxton<sup>6</sup><sub>Jan.4</sub> cites a case of tobacco amblyopia in which the patient was able to name and match colors, but would have confused red and green at a distance of 100 feet because of the existence of a simple scotoma.

In speaking of the abuse of *alcohol and tobacco as a cause of acquired color-blindness*, Thompson<sup>1070</sup><sub>July</sub> pertinently says that "a

disease once excited in an organ by any toxic agent, even if cured, will be very apt to return if the poison be again administered. Tobacco and intoxicative amaurosis is a good example of this law; therefore, if an individual once suffers, he is extremely liable to have a relapse on the slightest provocation, and inasmuch as we know by experience that the drinking and smoking habits are very rarely permanently overcome, we cannot be in error or work a hardship when we advise that all employes of railroads or at sea who drink or use tobacco in excess be critically and from time to time examined especially for the sense of color, and if it is found that there is any reason to believe that the scotoma for red or green exists or has existed, it is best to give our corporations the benefit of any doubt by striking all such suspects from the rolls."

Hess<sup>204</sup><sub>Dec., '89</sub> gives us some valuable results concerning the color perception in indirect vision. The work is based upon complementary colors. The conclusions make him a firm believer in Hering's theory.

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## SECTION II.

### ERRORS OF REFRACTION AND ACCOMMODATION.

Randall<sup>59</sup><sub>Aug. 9</sub> believes that the assumption of the *prevalence of emmetropia* has little basis, and that the hypermetropia which preponderates in infancy is really less in childhood and has passed away at maturity, is in conflict with the best attested facts. He cites the results of all the investigations, giving data as to the relation of age to refraction. He says that these conclusions show very slight decrease in the grade of hypermetropia; in fact, one which is surprisingly small, in view of the pathological tendencies toward myopia. The author asserts that all tendency toward emmetropia and myopia is pathological, not physiological.

Arminski<sup>78</sup><sub>Aug. 31</sub> properly maintains that *hypermetropia* is the *normal refraction of the uncivilized man*, while myopia is a product of civilization developed in the struggle for existence. He regards emmetropia as only a stage in the transition to myopia. Regarding the relation of the *conus* to refraction, Seggel<sup>204</sup><sub>Aug. 29</sub> finds that the *conus* is the exception in emmetropia and hypermetropia. He also says that if it be disproportionately small in size to the degree of myopia, it is an evidence of a congenital anomaly;

further, that the annular form is a mere continuation of the simple variety in increasing refraction error.

Rijnberk, our corresponding editor in Amsterdam, Holland, reports that very little new work has come under his observation; he calls our attention, however, to Straub's theory of the *development of emmetropia out of the hyperopic child's eye*. He says that Straub states that the development of the eye to emmetropia is affected "as a consequence of *the lasting shortening of the ciliary muscle, which adapts itself to its minimum of shortening,—*institution for parallel rays,—a regulation, therefore, of the tension of the eye-septum to the farthest point, simply explained by the fact that the eye-septum is *under the direct influence of nerves*, by means of the ciliary muscle, and can, therefore, better be made fit for its purpose by *constant practice*." Winslow<sup>776</sup><sub>July</sub> reports a case in which partial *correction of emmetropia* in a girl 12 years of age is *said to have completely relieved symptoms of grave nervous disease*, consisting of pain and numbness of the right upper extremity, followed by numbness without antecedent pain on the same side of the face. During the prevalence of these phenomena, the internal rectus of the right eye would contract and turn the eye in. Theobald<sup>99</sup><sub>Aug-14</sub> reports 3 cases of ametropia which he considers noteworthy because of much better near vision than the age of the patient and refractive condition of the media appeared to warrant.

In an article entitled "Can Headaches and Asthenopia Resulting from Hyperopia be Relieved Without Glasses?" A. B. Norton<sup>776</sup><sub>Oct.</sub> answers that, "in the light of present knowledge and experience, we believe that in a great many instances it can be done." According to the author, this is to be accomplished by systematic exercise of the internal recti muscles, thus indirectly influencing the ciliary muscle; and, as the actions of these two muscles bear a fixed and definite relation to each other, he asks, "Is it not sound reasoning to believe that, by increasing the power of the one we can reach, we are benefiting both?" Theobald<sup>347</sup><sub>Feb.</sub> gives the notes of 2 cases of squint and 1 of esophoria, due to anisometropia, in which the muscular anomalies are said to have been cured by correction of the error of refraction.

Nimier<sup>173</sup><sub>Apr.</sub> has made an interesting study of the *acuity of vision and the occurrence of strabismus in hyperopes*. As a

result of the examination of 1116 hypermetropic eyes he reaches the following conclusions: 1. The hypermetropic eye is not always simply an eye relatively too short. It is, moreover, often astigmatic, and often, also, its innervation is deficient. 2. These three defects together account for the diminution of visual acuity presented by most hyperopes; and of these three the most important in this respect is often the insufficiency of innervation. 3. Comparison of the visual acuity in the two eyes exhibited by a hyperope demonstrates (*a*) that, as a rule, vision is less acute in the eye that is more hypermetropic, and (*b*) that, in some cases, unequal vision is associated with the same refractive error in the two eyes. 4. Divergent strabismus among hyperopes is more common than is generally supposed. 5. All cases of convergent strabismus cannot be explained by excessive convergence due to an excessive effort of accommodation. 6. When a hypermetropic child begins to squint, search should be made for causes which seem to favor the production of strabismus. Certain cases of strabismus are wrongfully classed as hypermetropic.

As a corollary to these results, Parinaud<sup>173</sup><sub>Apr.</sub> relates the case of a young man presenting this amblyopia of anisometropia. The patient had never squinted, but, in his more ametropic eye, he possessed a vision of less than  $\frac{1}{40}$ , the explanation of which was found in a central scotoma without lesion of the optic disk. Each of his parents had one eye decidedly affected with anisometropia and amblyopia. Parinaud considers that his patient presented an accumulation of hereditary influences, which not only reduced his central vision, but went on to the production of a veritable scotoma.

Seggel,<sup>204</sup><sub>Aug.</sub> after extensive researches as to the *dependency of myopia on orbital structure*, practically arrives at the following final results: The height of the orbit in adult males is inconsideably greater than in adult females; the width is considerably greater in the former; in childhood the inverse ratio exists between the two sexes regarding height; the orbits of young myopes, prevalently boys, are very low, lower than in emmetropes and hypermetropes of the same age, respectively. He finds that in adult age myopes have, on the average, the highest orbits, whilst hypermetropes have the lowest, the increase in the width of the orbit in such cases not materially differing under the different conditions



of refraction. He believes, therefore, that the increase in the height must be the determining factor for myopia in such instances. Kirchner<sup>58</sup><sub>v.7, No.3</sub> has made a thorough study of the causes of myopia among the pupils of two large gymnasia. His conclusions are that nationality and complexion have no influence; that the formation of the skeleton of the face holds to the refraction a certain relation which needs further investigation; that heredity is an important predisposing factor,—most marked when both parents are myopic, less when the mother alone, and still less when the father alone, is thus affected; that under the same conditions girls seem to be in greater danger of myopia than boys; that near work, as in writing and reading, with taxing intellectual labor, is the main factor in the development of myopia, in consequence of the continual accommodation and strong convergence; and that, finally, this influence is heightened by bad hygienic surroundings. He supplements his work by making wise suggestions concerning the enforcement of school hygiene. In 5 cases of *myopia* exceeding 7 dioptries, Nuel<sup>173</sup><sub>May</sub> has found what he terms a *peculiar formation of the papilla and the central vessels of the retina*, which, he thinks, may be a valuable aid in many cases in determining whether a child's eyes are liable to become highly myopic. The peculiarity, he thinks, is that the central vessels, instead of extending upward and downward, are directed more or less strongly toward the temple, and that they lie upon the jutting edge of a physiological excavation going to the temporal border of the nerve-head, where, as a general rule, there is a semi-lunar atrophy of the choroid.

After a careful examination of about 5000 students of schools and colleges in the western-central part of France, Motais<sup>173</sup><sub>Apr.</sub> finds that *acquired myopia* exists in 35 per cent. of the students of the most advanced classes, a proportion that is increased to 46 per cent. by the omission of military schools, from which myopic students are, to some degree, excluded. This result, he says, closely approaches the averages found by Cohn in Germany and Emmerth in Switzerland,—57 and 50 per cent., respectively. In the lowest classes he found 0 per cent.; in the intermediate, 17 per cent.; and in the advanced classes of rhetoric and philosophy, 35 per cent. He insists upon the extreme importance of the adoption of rigorous hygienic measures. Ramos-Vices, of Mexico,<sup>78</sup><sub>Aug.</sub> reports that among 2300 Mexican children of the lower schools myopia existed in 2.4

per cent. of the crossed races (2000 individuals), and in but 0.3 per cent. of the natives (300 individuals). In 500 pupils of the higher schools there was 19 per cent. of myopia. He concludes that in the native race myopia is very rare, in the crossed race a little more common. The high percentage in the advanced schools he attributed to the use of artificial light.

In an analysis of 41,951 cases observed in various clinics, Schweizer<sup>254</sup><sub>July</sub> has found that 6.3 per cent. of all myopes (5039 cases) are affected with macular disease, and that two-thirds of the patients thus affected belong to the female sex. In more than 50 per cent. of the 185 cases of macular disease the trouble was bilateral. Under 10 years of age he has observed that macular disease is very rare, but that it rapidly becomes more frequent in advancing years, increasing from 3.7 per cent. between 10 and 15 years to 10 per cent. in the whole period between 10 and 20. Further, he has noted that myopia developing in early years predisposes to macular affection, and that the latter occurs either isolated or in contact with the staphyloma, in the former case always with the strongest myopic destructions. He considers the causes of these changes to be circulatory disturbances, such as congestion in overwork, affecting most strongly the part richest in blood-supply,—the choroid about the macula. Diseases of the vitreous body, 2.6 per cent. in 5039 cases of myopia, were found to commence at about 9 D., and increase in frequency about *pari passu* with the macular disease and the higher degrees of myopia. In conclusion, he asserts that retinal detachment can scarcely be considered as a prevalent affection of old age.

In cases of *progressive myopia*, where the retinal vessels and fibres undergo a certain amount of rotation toward the temporal side of the eye-ground, Nuel<sup>52</sup><sub>May</sub> asserts that there must be a continual re-adjustment of the central perception of images, otherwise the alterations in the fundus which are constantly ensuing would give rise to visual distortion. Priestley Smith<sup>2</sup><sub>Sept. 27</sub> says that to check the increase of myopia we must prevent young people from using their eyes too long and too closely upon near objects.

Ritchie<sup>776</sup><sub>Jan.</sub> has seen, in a woman aged 28 years, *malignant myopia* in an eye which had been rendered useless for binocular vision since childhood. There was a slight convergent squint of the eye. The refraction of the fellow-eye was hypermetropic. The

author believes that the pressure of the external rectus and the oblique muscles, and traction on the optic nerve, were factors in the cause of the myopia.

Schmidt-Rimpler<sup>204</sup><sub>Dec., '89</sub> publishes the results of a second ophthalmic examination of the pupils of a considerable number of German schools of the higher grades. Of the 1710 pupils examined in 1885, 702 were re-examined in 1889, the total number of pupils in the latest examination being 2002. The statistics show an undoubted increase of myopia in the higher classes. In relation to the frequency and degree of the so-termed hyperæmia of the optic disk, the author finds it is present with nearly equal frequency in the lowest and highest degrees, while it seems more frequent in the moderate degrees; but the pigment alterations which are found close to the optic disk, or which extend into a defined conus, increase progressively with the degree of myopia. These facts, he thinks, show how frequently myopia is acquired at school, and ought to contribute to greater caution against the danger of a progression of the defect through protracted school-life and bad hygiene.

Nicati<sup>274</sup><sub>Mar., Apr.</sub> gives a *method of determining* more accurately the *degree of myopia* by the inverted ophthalmoscopic image. He asserts that by placing himself at some little distance from the patient, and approaching the eye to be examined until his own eye reaches a position at which the inverted image disappears, he can readily determine the refraction by the contrast between the white disk and red reflex of the fundus being lost. He considers that the observer's eye is then at the focus of the patient's dioptric system, and consequently the distance between the two eyes at once gives the focal length of the patient's myopia.

Motais<sup>173</sup><sub>May</sub> reports the results of 14 cases of progressive myopia of from 10 to 20 D., in which he practiced tenotomy of the external recti: 1. No amelioration in the degree of myopia. 2. Complete arrest of progress in 8 cases and relative arrest in 4, while in 2 cases the progress was uninterrupted. 3. With 4 patients visual acuity increased gradually from  $\frac{1}{10}$  to  $\frac{2}{10}$ ; with 6 the vision, although only slightly increased, has not subsequently fallen; with 2 the vision has slowly diminished without appreciable increase of the myopia. In the remaining 2 all the symptoms have rapidly increased. In these 2 cases he noted

strong hereditary predisposition derived from the third and fourth generation back. In the 10 cases of improvement the patients have experienced complete relief or notable amelioration of their symptoms.

Chisolm<sup>40</sup><sub>Mar.</sub> observes that "near-sightedness is becoming too common an eye trouble, and has as its fruitful source the present forced education of the very young." Fukala<sup>201</sup><sub>Aug.29</sub> has treated 19 cases of *high myopia* in young people by producing *aphakia*, and gives the following advantages gained by the operation: distinct distant vision; enlargement of the retinal images; lessening of exaggerated convergence by the increased distance of the far point; relief of the stooping posture in near work; restoration of binocular vision; and, finally, cessation of the spasm of accommodation.

Koller<sup>61</sup><sub>Sept.8</sub> believes that for the *determination of astigmatism* Javal's ophthalmometer "furnishes the greatest accuracy in combination with greatest rapidity of work, and, therefore, it is the instrument of the future." As a comparative result of examinations of astigmatic eyes by ophthalmometry and optometry, Bull, of Paris,<sup>173</sup><sub>May</sub> reaches some interesting conclusions. As shown by the ophthalmometer, the degree of astigmatism differed 0.25 to 0.75 dioptries from that determined by the optometer. In 10 per cent. of the cases this variation was sufficient to change the type of astigmatism from that of the rule to that which is contrary. Between the meridian of greatest corneal curvature and the principal meridian indicated by the subjective method there was found a difference of at least  $5^{\circ}$ ; and in 91 per cent. the latter method showed that this meridian was more nearly horizontal. This difference of result he explains upon the theory of obliquity of the lens, as suggested by Tscherning. Statistics of refraction of 4664 patients are presented by Pflueger,<sup>78</sup><sub>Aug.</sub> which show astigmatism in 25 per cent. of all cases. He finds also that the frequency of astigmatism contrary to the rule increases with age. Speakman<sup>49</sup><sub>Apr.5</sub> finds that, by adopting certain rules, Javal's ophthalmometer (1889 model) becomes, in reality, an astigmometer. He believes that we have "in this astigmometer an instrument by means of which we can fit an astigmatism without the use of atropine or any of the other mydriatics, and need only employ them in those cases where we wish to obtain their therapeutic action, as in spasm of accommodation and in the various diseases of the eye."

Chibret <sup>274</sup><sub>July, Aug.</sub> considers the *retinoscopic method* as superior to all others for determining low degrees of astigmatism, permitting an estimation within 0.25 D. in the majority of cases. His conclusions are practically as follow: 1. Corneal astigmatism according to the rule is by far the more frequent, being present in four-fifths of the cases. It is entirely or in part indicated by the ophthalmometer. The fraction which escapes this observation sometimes is easily detected by the retinoscope, although often corrected by astigmatic contraction of the crystalline lens, notably in young subjects. It can reach or even surpass 2 D. 2. Astigmatism contrary to the rule of crystalline origin is more rare than the preceding variety, being present in only one-fifth of the cases. It is often unaccompanied by any corneal astigmatism that can be detected by the ophthalmometer. It is readily estimated within 0.25 D. by retinoscopy. The patient generally accepts the objective correction, his acuity of vision being frequently doubled by a weak cylinder, such as 0.75 D. This variety of astigmatism rarely reaches 2 D. 3. The correction most useful is, in general, comprised between the ophthalmometric and retinoscopic findings, the subjective method approaching more often to the ophthalmometric estimation in astigmatism according to the rule, and to the retinoscopic in astigmatism contrary to the rule.

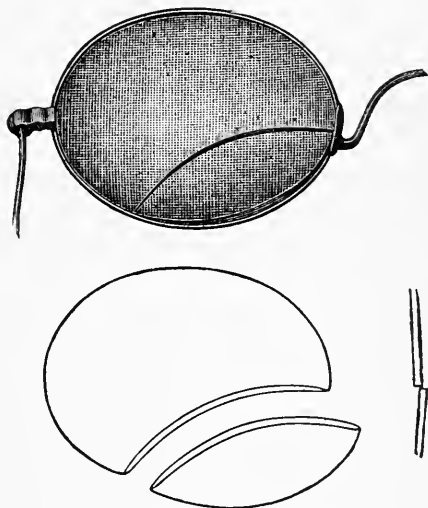
E. Jackson <sup>76</sup><sub>Sept.</sub> has noticed 17 cases in which the astigmatism, as measured under the effects of the mydriatic, had increased 0.5 D. or more. He thought such cases constituted about 2 per cent. of all the refraction cases remaining under observation for an equal period, four and one-half years on the average. The author states that "the cause seemed to be a tendency to unsymmetrical increase of the lens, or giving way of the sclero-corneal coat anteriorly, as it does posteriorly in progressive myopia, with the symmetrical growth of the lens." He says that no case was observed in which the astigmatism diminished 0.51 D. or more. To the query, "Where shall the line be drawn between normal and abnormal degrees of astigmatism?" Murrell <sup>61</sup><sub>Oct. 18</sub> makes answer that "It is largely a matter of clinical experience and not of optical perfection; since we observed many persons with much astigmatism who make little complaint, while in others, with the smallest appreciable degree, there are the most distressing symptoms." Eklund, corresponding editor in Stockholm, Sweden, sends us a careful abstract

of a paper by Guttstrand<sup>371</sup><sub>v.22, No.1</sub> which discusses the theory of astigmatism from a mathematical point of view. Frothingham<sup>61</sup><sub>Oct.25</sub> records a case of static lenticular astigmatism acquired by the long-continued use of spectacles having a faulty position.

A most interesting case of astigmatism in a young woman, in which retinoscopic examination showed a myopic and also hypermetropic shadow in the same meridian of the same eye, has been seen by Tunmer.<sup>6</sup><sub>June 28</sub> The hypermetropic shadow was observed when the patient was made to fix the centre of the mirror, while the myopic result was obtained by directing the patient to look over examiner's shoulder. Keeler<sup>776</sup><sub>Oct.</sub> reports a case of headache of ten years' duration cured by the correction of an existing astigmatism, associated with exercise of the external recti muscles, by the use of prisms. Wyle<sup>74</sup><sub>Jan.</sub> notes an instance in which correction of  $\frac{1}{4}$  dioptré of astigmatism entirely relieved a persistent nervous headache. Martin, of Bordeaux,<sup>171</sup><sub>Jan., Feb.</sub> presents an elaborate study of the influence of varying degrees of *astigmatism in the production of amblyopia*. His conclusions, based upon the comparison of 128 astigmatic eyes (64 patients), may be summarized as follows: In astigmatic patients the degree of amblyopia, after accurate correction, varies from  $\frac{1}{10}$  to  $\frac{9}{10}$ , and appears generally to be proportional to the amount of astigmatism. The exceptions to this proportion seem to be due to the state of the general health. When the patient has one good eye, the amblyopia of its fellow, corresponding to the given degree of astigmatism, is more pronounced than when both eyes are amblyopic. Amblyopia of  $\frac{1}{10}$ , when monolateral, appears with a mean degree of astigmatism of 1.75 D., while in bilateral amblyopia, for this same amount, the mean of astigmatism is 2.50 D. In these two varieties of amblyopia, apart from mean results, each quarter of a dioptré of astigmatism increases the degree of amblyopia about  $\frac{1}{10}$ . This does not seem to be true for monolateral amblyopia beyond  $\frac{4}{10}$ . Bilateral amblyopia higher than  $\frac{6}{10}$  has not been encountered, while in 20 cases of the monolateral type the degree of amblyopia has exceeded this figure, the majority reaching or surpassing  $\frac{9}{10}$ . The partial contractions of the ciliary muscle, which serve to correct static astigmatism, so much the more strong as the health is better, account perfectly for slight amblyopia in cases of high astigmatism. The absence or insufficiency of these contractions, due to constitutional feebleness, explains, even with

subjects slightly astigmatic, that part of the amblyopia which does not depend upon a congestive state. He says, further, that when an eye is only slightly or not at all astigmatic, its fellow, if markedly astigmatic, makes less effort to correct its own optical defect. This is why, with a low degree of astigmatism in one eye, there is found a pronounced monolateral amblyopia in the fellow eye. It is probable that other causes (strabismus, disuse, hypermetropia) play a part in the production of high monolateral amblyopias. Gifford<sup>59</sup><sub>July 5</sub> protests against the wholesale prescription of spectacles, particularly for children and young persons, with what seems to him to be insufficient cause.

Fano<sup>290</sup><sub>Jan. 14</sub> explains the reasons why some presbyopes are in the habit of wearing their glasses far down upon the nose in reading. He believes it is an effort to overcome the effect of too strong a convex lens. Such a glass brings to a focus in front of the retina the rays diverging from the point at which the object is viewed. If such a convex lens be carried nearer



CLINE'S BIFOCAL LENS.  
(Trans. Med. Soc. Penna.)

to the object, the distance of the conjugate focus behind the lens is increased, so that a position is reached at which the object will have its conjugate point focused exactly upon the retina.

In the construction of *bifocal lenses*, Cline<sup>1071</sup> suggests that the glass for near work be made to occupy the lower inner quarter of the spectacle-frame, as shown in the sketch. The lower edge of the distance lens is beveled so as to admit of its planes being made perpendicular to the visual axes in parallelism and convergence. In a form of bifocal lenses suggested by Percival,<sup>219</sup><sub>Apr. to July</sub> the presbyopic glass is made of sufficient size to allow of a field of fixation equal to  $14^{\circ}$  on each side of the middle line, the upper limit forming a horizontal line. He says that it appears also possible to decentre this small glass in such a manner that when com-

bined with its larger fellow the optical centre of the two may be traversed by the visual lines in reading.

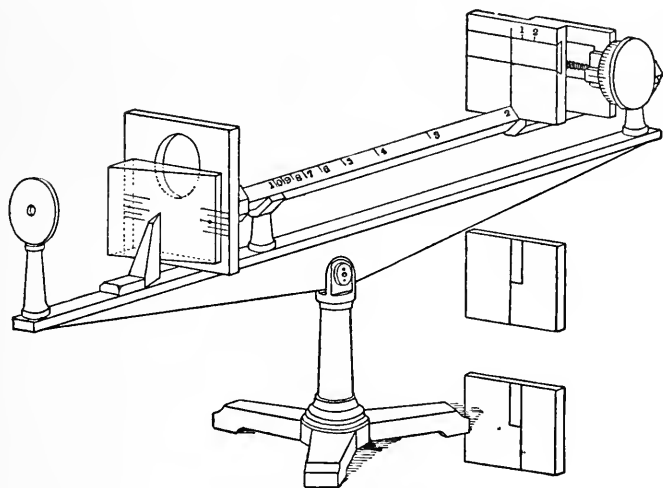
For the diagnosis of errors of refraction, Valk<sup>40</sup><sub>June</sub> considers *retinoscopy* one of the simplest methods, and, when carried out in all its details, one of the most exact. Bissell<sup>76</sup><sub>Oct.</sub> says of the shadow test that "it is scientific; it is practical; in its sphere of application it is accurate; and under certain circumstances it is superior to any other one method." A simple modification of Scheiner's test, based upon the projection of images, has been suggested by Corderio<sup>1</sup><sub>Jan. 4</sub> for the diagnosis and estimation of errors of refraction. In order to attain the highest degree of accuracy in the shadow test, E. Jackson<sup>76</sup><sub>Feb.</sub> considers it essential, as far as practicable, to not only have the area of retinal illumination as bright and small as possible, but to secure to it the most definite boundary; that is, the sharpest and most sudden transitions from light to shade. To insure conformity to these conditions of accuracy, he deems it necessary to attend to the brilliancy of the source of light, its size, outline, and position. After stating that the electric arc-light is an ideal one for retinoscopy, he gives a short and interesting account of the method.

An interesting *history of spectacles* is given by Fox,<sup>19</sup><sub>May 3</sub> in which he graphically describes the evolution of the bifocal and trifocal varieties. Jays<sup>274</sup><sub>Sept., Oct.</sub> gives several tables showing the effects produced by *decentring spherical spectacle lenses*. Marius Coque<sup>78</sup><sub>June</sub> presents formulas derived by trigonometrical calculation which give an accurate estimate of the prismatic value of decentred lenses. For the double concave or convex forms the degree of the prism is found by multiplying the number of the lens in dioptres by the decentration (expressed in centimetres) and then by the constant factor 1.114. In the case of plano-concave or plano-convex lenses this constant factor is to be taken divided by 2. Valude<sup>78</sup><sub>Aug.</sub> has made a double series of spherocylindrical lenses of the perisopic variety, which represent the surface of a *tore*.

In the *correction of irregular astigmatism*, Galeczowski<sup>173</sup><sub>Aug.</sub> claims to have had unusual success by employing cylindro-conical lenses, which, he explains, are formed from cones of different altitudes by sections similar to those made upon cylinders for the evolution of the ordinary cylindrical lenses. In order to preserve symmetry in the method of designating the inclination of the axes



of cylindrical lenses, Leplat<sup>293</sup><sub>May</sub> advocates the adoption of a modification of the plan in general use, by which the zero-point shall be placed at the nasal extremity of the horizontal axis for each eye, and the angles of inclination measured along the upper semi-circumference toward the outer temporal extremity. He gives a simple method of arriving, as far as possible, at an accurate adjustment of axes in patients who will not wear spectacle-frames. The chosen pince-nez is to be tried on in presence of the optician, who, by a little plumb-line, determines the vertical axis, which is then marked upon the frame. The mean of several trials is to be taken as the vertical axis from which the axis of the cylinder can be calculated.



PRENTICE'S PRISMOMETER.  
(*Archives of Ophthalmology.*)

To insure strictly accurate work on the part of the optician, Prentice<sup>249</sup><sub>Apr., July</sub> has devised an instrument, called a *prismometer*, by means of which prisms can be measured so as to accurately correspond to the oculist's instructions. The accompanying cut gives an excellent idea of the contrivance. He thinks that the instrument is particularly indispensable when it is desired to measure prisms which have been combined with lenses, as decentration of the latter is known to affect the value of the prism in proportion to the refraction and decentration of the former. He says that "the relation of the prism-dioptry to the lens-dioptry is also reduced to the utmost simplicity, to wit: lenses are capable of pro-

ducing as many prism-dioptries as they are possessed of lenticular dioptries of refraction, provided they are decentred 1 centimetre." He believes that although a mathematical treatment of the subject has been found necessary to demonstrate its correctness, yet no greater proficiency will be demanded in practice than a correct application of the few simple rules set forth. He suggests that by suitably constructed auxiliary apparatus it may ultimately be proven practicable to deduce from a measured amount of diplopia, at 6 metres, the prism which will correct it. For instance, a measured diplopia of 6 centimetres, at 6 metres' distance, is equivalent to 1 centimetre at 1 metre's distance; so that one prism-dioptry would represent the correction of the measured manifest diplopia.

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### SECTION III.

#### SPECIAL DISEASES.

*Diseases of the Orbit.*—In order to hide the unsightly *appearance of the orbit* after complete removal of all its soft parts, Küster <sup>336</sup><sub>Jan. 11</sub> sews the lids together after removing the ciliary margins. If the lids themselves be destroyed, he makes use of a pediculated flap taken from the temporal region. He claims that in 12 cases treated in this manner the results were good. Adamük <sup>251</sup><sub>Apr.</sub> publishes 3 cases of *orbital bony tumors*, which in some points corroborate and in others contradict Smith's results in regard to the etiology and character of such growths. He speaks highly of the advantages of tarsorrhaphy and its beneficial influence over the growth of orbital osteomata and angiomas. Karl Grossman <sup>26</sup><sub>Jan.</sub> gives a description of the condition present in a case of ivory exostosis of both orbits, three years after an operation for the removal of the growth from the right orbit. On the right side the growth had progressed so as to entirely fill the orbital cavity, and in one place had reached the surface. The exostosis of the left orbit seemed to remain stationary without disturbing the eye. Pooley <sup>59</sup><sub>July 20</sub> has operated for removal of a large exostosis of the orbit. The tumor was removed by the use of a chisel. Three weeks later the vision had increased to  $\frac{2}{4} \frac{0}{0}$  and all evidence of a past neuritis had disappeared.

Bullard <sup>207</sup><sub>May</sub> has seen a case of fibrosarcoma of the orbit. The

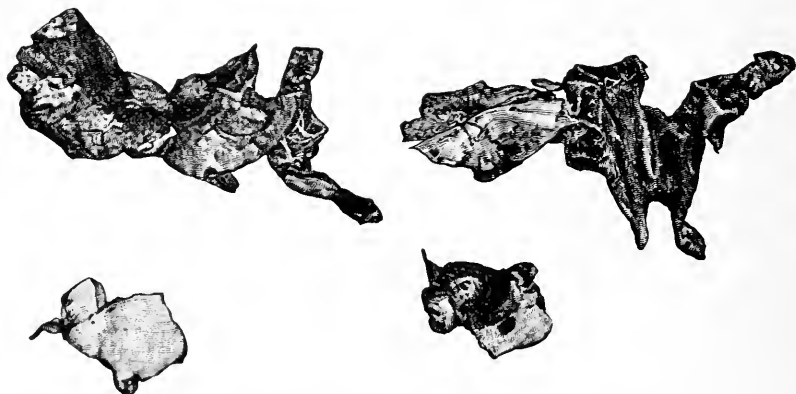
surrounding skin was so infiltrated with tumor-tissue that an operation was impossible.

Loewy<sup>190</sup><sub>July</sub> reports a rare case of neoplastic involvement (probably fibrosarcoma) of the bones of the face, causing most horrible deformity. The patient was a man 33 years old, and had first noticed the disease in his 11th year. The tumor had taken its origin probably in the sphenoid or ethmoid bone; had invaded both orbits simultaneously, and later the nasal cavities and maxillary sinuses, but had spared the frontal sinus and the nasopharyngeal region. With the appearance of exophthalmos complete amaurosis gradually developed. De Lapersonne<sup>181</sup><sub>Jan. 24</sub> reports a case of *melanosarcoma of the globe* in a man aged 48 years, for which enucleation was practiced by Dujardin in 1885. The disease soon recurred in the orbital tissue, but its progress was so slow that four years were consumed before the *growth filled the orbital cavity*. At the end of this period the patient came under the care of the author, who, finding that there was no evidence of extension to surrounding parts or of metastasis, made a complete removal of the orbital contents. One year after this operation there was no sign of return. In view of the very grave prognosis usually given in this disease, the author thinks that operation, even upon recurrent growths, should not be refused, when there can be found no evidence of invasion of the cranial cavity or of systemic generalization.

Berry<sup>22</sup><sub>June 11</sub> has removed a portion of the stem of a clay pipe, nearly 2 inches in length, from the orbit. In order to remove the body it was found necessary to sever the insertion of "several of the ocular muscles." No injury to the sight resulted. Norris<sup>1072</sup> reports 2 cases of *foreign bodies in the orbit*. The first instance was that of a patient who had had the left eye enucleated, it having been destroyed by the explosion of a torpedo. The orbit contained a hard mass of very sensitive tissue covered by inflamed conjunctiva. Examination with the finger detected a firm metallic substance; under ether and by the use of powerful traction, two large pieces of malleable metal were extracted. The wood-cuts on next page give an accurate representation of their size and appearance. No fracture of the orbital walls could be detected. In the second case the patient had been struck in the eye twelve days previously by a nail. There was a cicatrix in the

lower lid, and another in the conjunctiva corresponding in position to that of the lid. The motions of the globe were limited. The conjunctiva was chemosed and the anterior chamber contained remnants of an absorbing clot. On careful inspection a minute black point was seen projecting from the bulbar conjunctiva near the caruncle. The opening was enlarged and a piece of nail three-quarters of an inch in length was removed.

McKay<sup>76</sup><sub>Sept.</sub> records a case of *orbital cellulitis*, secondary to mastoid abscess. The patient gave a history of having a discharge from the right ear for three months, which had been diminished in amount for three days preceding the first visit. The examination showed a large mastoid abscess, with great swelling of the



FOREIGN BODIES IN THE ORBIT.  
(*Transactions of the American Ophthalmological Society.*)

tissues in the region of the orbit and temple on the right side. The corresponding eye, which protruded, contained hazy media and was blind. The abscess was evacuated and a deep incision was made at the upper inner angle of the orbit, which resulted in a steady improvement in the symptoms. The eye, however, atrophied, and the orbital contents became shrunken.

Panas<sup>173</sup><sub>May</sub> calls attention to the difficulties attending the *diagnosis of abscess of the frontal sinus* from other lesions of the orbital cavity. Tubercular and syphilitic inflammation, as well as osteitis, are especially prone to affect the outer aspect of the inferior border of the orbit, so that any suppuration about the superior orbital margin should suggest at once the probability of involvement of the sinus. One symptom which he has never found absent is

severe neuralgia along the course of the supra-orbital and nasal nerves. The sinus should be opened by trephining, a large-sized drain introduced, and the cavity washed out daily with solution of biniodide of mercury, 1 to 20,000. Inasmuch as the solution passes readily down the canal to the middle meatus of the nose, he considers the plan of introducing a drainage-tube as both useless and dangerous.

A case of inflammatory *exophthalmos* of unknown origin is reported by Eissen.<sup>254</sup>  
Dec., '89 Simple antiphlogistic treatment effected a cure in two weeks, but fever persisted some time after the local symptoms had abated. *Bilateral orbital gummata* in a colored woman 29 years of age, presenting syphilitic lesions, have been seen by Evans.<sup>224</sup>  
Mar. 15 An interesting case of *pulsating tumor of the orbit* in a woman 60 years of age is recorded by Naylor.<sup>267</sup>  
Feb.

Emmert.<sup>214</sup>  
Jan. 15 reports a case of *arterio-venous aneurism* of the right internal carotid and the cavernous sinus, in consequence of traumatism of the left orbit, with loss of the left eye, and *exophthalmos*, paralysis of the abducens, and neuroparalytic keratitis of the right eye. This patient was subjected to five operations, ligature of the common carotid being finally necessitated. A case of *orbital aneurism* in a man 30 years of age, following a blow on the head, has been treated by ligation of the common carotid artery by Pritchard.<sup>131</sup>  
June Sudden death of the patient occurred eleven months after the operation. Post-mortem examination showed both of the lateral ventricles and the fourth ventricle to be full of blood, whilst a united fracture of the petrous portion of the left temporal bone was found running up to the cavernous sinus, which contained two holes in its walls.

*Diseases of the Lachrymal Apparatus.*—Van Millingen.<sup>274</sup>  
Nov., Dec., '89 asserts that *ozæna* is a frequent cause of disease of the lachrymal passages and of characteristic changes in the cornea and conjunctiva. He further concludes that it can cause suppuration in the wound after a cataract extraction, and advises that the nasal cavities should be examined and treated, if necessary, before such an operation. Marc Dufour.<sup>197</sup>  
July 20 reports a case of what he considered “mumps of the lachrymal glands,” which occurred during an epidemic of parotitis. An experimental attempt to inoculate a healthy conjunctiva with the secretion gave a negative result. To this category Hirschberg.<sup>190</sup>  
Mar. adds 2 cases, with a photograph of

one patient which shows the peculiar appearance of the lids. Both of his cases recovered under the use of warm fomentations and iodide of potassium.

Chibret<sup>173</sup><sub>Feb.</sub> commends the value of *ablation of the palpebral portion of the lachrymal gland*, as practiced by de Wecker, as a means of controlling excessive lachrymation. He has performed the operation in 28 cases, with an average result of reducing the secretion of tears to one-fifth of its previous amount. Galezowski<sup>173</sup><sub>Dec., '89</sub> details 2 interesting cases in which unsuspected *obstruction of the lachrymal ducts* has given rise to symptoms closely *resembling the prodromes of glaucoma*. In one patient, a healthy man of 73 years, iridectomy had already been done in one eye by a prominent specialist. He states that conjunctivitis lachrymalis, stenosis or obstruction of the lachrymal ducts, and ectropion can give rise to rainbow-circles, periodic dimness of vision, peri-orbital pain, and ocular neuralgia, *muscæ volitantes*, and other characteristic symptoms of incipient glaucoma. Most of these symptoms, he states, are due to a series of prisms of tears before the refracting media. To these instructive cases Trounseau<sup>173</sup><sub>Feb.</sub> adds 3 in which stenosis of the lachrymal ducts was said to be responsible for most unpleasant symptoms of asthenopia. A curious case is reported by Malgat,<sup>173</sup><sub>Apr.</sub> in which an *abscess of the inferior lachrymal canal* was found to be caused by a piece of lettuce-leaf 2 millimetres long and 1 millimetre in circumference. The foreign body had been driven into the nose and thence into the nasal duct by repeated efforts of sneezing. This observation indicates that the so-called valve of Richet, which is supposed to guard the lower end of the nasal duct, can be forced to open upward under strong pressure.

Jaesche<sup>254</sup><sub>Dec., '89</sub> describes his method of treating *stricture of the lachrymal duct*, for the relief of which he has devised a knife and a grooved probe. Gillet de Grandmont<sup>173</sup><sub>May</sub> deprecates the routine *slitting up of the canaliculi* in every case demanding treatment of the lachrymal sac or nasal duct, believing that very often the punctum can be dilated sufficiently for the passage of instruments by use of the conical sound. He states that stenosis of the lower end of the nasal duct often can be relieved by the galvano-cautery. Suarez de Mendoza<sup>173</sup><sub>May</sub> frequently employs a flexible sound of whalebone when the sac is the seat of obstruction, preferring this to the metallic probes of Bowman. In the treatment of

*stenosis of the nasal duct*, Hasbrouck<sup>776</sup><sub>Apr.</sub> adopts the method recommended by Benson, which consists in the use of "removable" styles, introduced by the patient and worn during the night. In 3 cases, Murrell<sup>61</sup><sub>June 28</sub> has had *phlegmonous inflammation of the tear-passages* follow the repeated instillation of 2-per-cent. infusion of jequirity into the eye.

Webster<sup>1</sup><sub>Feb. 8</sub> calls attention to the importance of making an early *diagnosis between acute dacryocystitis and erysipelas*. In the treatment of the former affection he urges early incision at a point between the caruncle and the inner canthus, where there is only the conjunctiva and the sac-wall to penetrate. In *dacryocystitis*, Nicati<sup>271</sup><sub>Mar., Apr.</sub> employs a method which, he claims, is rapid and sure. With a probe-pointed knife he incises the sac freely, and as low as possible behind the caruncle, using the superior lachrymal canal as a guide. If there be too much swelling and pain to permit of search for the punctum he penetrates directly into the swelling with a bistoury, finishing the operation by subsequent slitting of the canaliculus. A sound of 3 millimetres is passed, after which he introduces a drain of fine lead wire, doubled two or four times upon itself and twisted, which is left in place for three days. Persistence of lachrymation indicates the presence of granulations, which are further determined by a marked tendency to bleed upon the slightest irritation during probing. These will disappear spontaneously, but are hastened by astringent collyria.

Venneman<sup>173</sup><sub>May</sub> treats lachrymal fistula by the daily introduction of a pledget of gauze soaked in lactic acid, followed by the application of an antiseptic dressing. By this plan a hard crust is formed beneath the cutaneous orifice, under which healing goes on rapidly, and the cure is complete in from one to five weeks. Two cases of Seggel's<sup>353</sup><sub>Sept.</sub> corroborate clinically the anatomical studies of Merkel and Gerlach, which demonstrate that the *lachrymal papillæ* are surrounded by muscular fibres. In both cases dacryorrhœa is said to have been caused by atresia of the puncta in consequence of spastic contracture of this sphincter. It disappeared under treatment directed to the spasmodic condition. Rogers<sup>86</sup><sub>Nov.</sub> gives a short account of diseases of the lachrymal canal. His observations, extending over two and one-half years in Southern California, lead him to believe that the ratio there is rather less than 2 per cent.

*Diseases of the Extra-Ocular Muscles.*—In a study of the *pathogenesis of divergent and convergent strabismus*, Hansen-Grut<sup>353</sup><sub>Apr.</sub> comes to the following conclusions: 1. Convergent squint originates in faulty innervation, which causes an abnormal shortening of the internal rectus. When this innervation ceases permanently or temporarily, the squint disappears. 2. Divergent squint is the expression of a diminished innervation for convergence, which allows the eye to assume, more or less completely, its anatomical position of rest. Against the theory of a passive shortening of the respective muscles he adduces the following reasons: 1. Anatomically, it is not proven. 2. It does not correspond with the fundamental laws of squint (*i.e.*, that the primary angle of deviation is equal to the secondary, and that the limit of motility in the direction opposite to the squint is always considerably smaller than the angle of deviation). 3. It does not correspond with the temporary disappearance of the squint (narcosis). 4. It is incongruent with the fact of spontaneous disappearance of the affection. Leopold Weiss<sup>353</sup><sub>Apr.</sub> publishes the *results of a post-mortem examination in a case of convergent strabismus*. At the age of 3 years the patient had suffered from severe conjunctivitis, resulting in corneal perforation, with synechiæ and extensive corneal opacities. Strabismus developed soon afterward. The measurements in the skull gave, among others, the following differences for the two eyes: Angle of inclination of orbital entrance—R., 11.5°; L., 6.5°. Direct distance of optic foramen from entrance of optic nerve—R., 16.5 millimetres; L., 20 millimetres. Depth of the orbits: inner wall—R., 40 millimetres; L., 41 millimetres; outer wall—R., 43.5 millimetres; L., 44.5 millimetres. From this study the author concludes that if, *cæteris paribus*, a nerve-impulse of equal force acts on the two sets of ocular muscles, the left visual axis will meet the axis of symmetry at a point nearer to the face than the right visual axis. If both eyes have equally good vision a re-adjustment of axes will be unconsciously effected in the interest of perfect binocular vision; but if vision is lower in one than in the other eye the mechanical asymmetry will manifest itself.

E. A. Browne<sup>76</sup><sub>Aug.</sub> has noted the following phenomenon in *conjugate movements of squinting eyes*: "That the movements of squinting eyes are performed in due conjugation, the angle of the



squint remaining constant until the extreme inward deviation of one eye has been reached; then the external rectus of the eye which is turned outward is able to resume an independent action and to continue the movement outward. By this means it is able to reduce the angle of the squint, and, to a certain extent, to restore the parallelism of the visual axes."

Valude,<sup>274</sup>  
July, Aug. gives a careful study of what he calls *neuropathic strabismus*. His conclusions are briefly as follow: 1. Concomitant squint is not always due to ametropia alone, and the rule of Donders cannot be applied to all cases, perhaps not even to the great majority. A neuropathic state constitutes an important, sometimes a preponderating, factor in the production of the ocular deviation. 2. There are many cases of simple ametropic strabismus in which the ametropia is the only cause. There are also cases of purely neuropathic origin, in which the eyes are emmetropic and the neuropathic state is the only cause. But there is yet a class of strabismus cases, the most numerous, in which the influence of ametropia and that of a neuropathic state are combined. 3. A purely ametropic strabismus demands operation and optical correction. In some cases the latter procedure alone is sufficient, especially when the defect is alternating or intermittent. But when ametropia is united with a neuropathic state as a cause, it is necessary to add to the operative or optical treatment, or often to the two combined, an appropriate general medical treatment. In certain cases of purely neuropathic origin treatment addressed to this condition will suffice. 4. When relapses occur some time after an operative and optical correction, which was at first perfectly satisfactory, the influence of a general nervous state has been overlooked. 5. The neuropathic state, such as is here understood, is not necessarily that advanced state of nervous degeneration which furnishes the subjects of epilepsy, hysteria, and other degenerative neuroses. The neurotic habit, often existing in both parents, which is transmitted to children, and can manifest itself in them under the form of occasional convulsions and slight nervous phenomena of no more than passing importance, is perfectly capable of engendering this neuropathic state that may act as a cause of strabismus. 6. In a majority of the cases in which both causes are associated, the ametropia is the predisposing and the neuropathic state the exciting cause of the deviation.

Schneller<sup>201</sup><sub>Oct.</sub> believes that in convergent strabismus the external rectus and in divergent strabismus the internal rectus are very often much more narrow and slender than in the normal state, and that this condition causes the tendency to strabismus. He thinks that the deviation is still further encouraged by anomalies of refraction and accommodation. Kugel<sup>204</sup><sub>Aug. 28</sub> finds that *single vision in strabismus* is obtained in one of three ways, which are briefly condensed as follows: 1. Rarely by suspension of the deviation. 2. When the deviating eye has inferior visual acuity, single vision is gained by an extinguishment of the images of this eye by the more sharply defined images falling on corresponding parts of the retina of the fixing eye. The annoyance of interfering fields or double images, in case the deviating eye has equal vision and normal retinal perception, is prevented by the difference of accommodation between the two eyes caused by the differing axial position and the obliquity of the deviating organ. 3. When the deviating eye has good monocular vision, single vision can be obtained by "an amaurosis of that area of the retina" on which in binocular vision fall the images received upon the macular region of the fixing eye. The condition here is a stationary pathological change caused by continued overirritation by light impressions.

In examining the *total field of vision in strabismus*, where one eye fixes, Hirschberger<sup>34</sup><sub>Mar. 11</sub> arrives at the following interesting results: In divergent squint the affected eye does not receive impressions, in the act of binocular vision, in a portion of the nasal side of its field. At the same time the unaffected eye loses a part of its field to the advantage of the squinting eye. The total field is therefore composed of parts of both fields, the interesting feature being in the facts that the visual fields do not have a common area, and are not superimposed the one on the other, but that no portion of the visual field belongs relatively to the two eyes together. Thus no double images are formed. He further finds that the size of the excluded area generally stands in the inverse ratio to the size of the angle of deviation. This exclusion of the squinting eye, he believes, leads to loss of central vision and explains the commonly observed amblyopia. In convergent strabismus the squinting eye, during the act of binocular vision, does not perceive that portion of its field of vision corresponding to the object of fixation; this area of exclusion does not include the macula lutea. The ques-

tion why, notwithstanding, double images are not perceived, the author answers by assuming that the fixing eye perceives in the whole of its visual field save that portion which corresponds to the macula of the squinting eye. These beliefs, it may be added, hold good only when the angle of deviation remains constant.

Maddox<sup>76</sup><sub>May</sub> suggests a *test for heterophoria* depending in principle upon the property of transparent cylinders to cause seeming elongation of any object viewed through them. In looking at a distant flame with a glass rod before one eye, the light appears to be converted into a long, thin line, at right angles to the axis of the rod. In employing the test, a glass rod about a quarter of an inch in diameter, mounted behind a rectangular aperture made in a disk, is placed horizontally before one eye, while a red glass covers the other eye. If the line of light passes through the red flame as seen by the other eye, orthophoria exists for the horizontal movements; but if the line lies to either side of the plane, latent convergence or divergence is manifested. In testing for vertical deviation, the rod is placed vertically so as to produce a horizontal line of light. If the line passes through the flame no vertical deviation exists, but if it appears above or below there is hyperphoria of that eye which sees the lower image. A method of measuring the degree of insufficiency, the principle of which the author believes to be new, consists in using two flames; on looking at them with a glass rod before one eye, two flames and two lines of light are seen, and "if both flames have a line passing through them there is no deviation; but if otherwise, the flames are made to mutually approach or recede from each other till the central flame and line meet, when their distance apart measures the heterophoria.

From a further employment of the rod-test, Maddox<sup>76</sup><sub>Oct</sub> concludes that the best way to use it is in conjunction with the scale-test. For measuring lateral deviations a horizontal scale is used, graduated from a central zero toward each end in degrees or metre-angles for a standard distance of 5 metres or 6 metres. A small gas-jet placed just in front of the central zero is used as the indicator. The author says that "on looking at this with the mounted rod held horizontally before one eye, a vertical stripe of light is seen crossing the scale at that figure which measures the deviation." For measuring vertical deviations he suggests the use of a second scale, or the same scale revolved about a central pivot

into a vertical direction. He claims that, "in paresis or paralysis of the ocular muscles," "it enables us to *measure* the vertical and horizontal elements of a deviation in all positions of fixation, not only in those where spontaneous diplopia occurs, but the entire area of latent diplopia as well; so that, by placing the patient's head in different positions, pareses can be detected, which remain unrevealed with the ordinary test of a candle and colored glass, which, of course, is only available in an area of spontaneous diplopia." Berry<sup>2</sup><sub>Mar.22</sub> suggests that if it is worth while to measure muscular deviations at all, it is only consistent that, having adopted the metrical system of measuring refraction, we should note the deviation in metre-angles, especially as the measurement of latent squint could be made in metre-angles or fractions of them as quickly as the determination of the visual acuity in the ordinary way.

From a study of the subject of convergence, Symons<sup>1000</sup> draws the following conclusion, that "the result of the examination of these cases has assured me that the best indication for this treatment, in cases of muscular asthenopia, is found in the measurement of the adductive power at distance." *Hypnotism* and suggestion have been employed by de Wecker<sup>173</sup><sub>May</sub> with success in the treatment of spasm of the eyelids. Guende<sup>173</sup><sub>May</sub> also reports a successful case of the same character.

Nicati<sup>274</sup><sub>Mar., Apr.</sub> has successfully treated a case of *congenital ptosis from muscular atony* by resection of the tarsal cartilage and advancement of the levator palpebræ.

Burkhardt<sup>34</sup><sub>Mar.11</sub> has seen the following rare case: After fracture of the temporal bone there appeared with other cerebral symptoms a decided concentric narrowing of the field of vision, great decrease of vision for form and color, and a *paralysis of the internal recti muscles* when used in efforts for convergence, while their function was intact in lateral deviation of the eyes. The ophthalmoscopic picture was normal, and the other functions of the eyes were perfect. From this case the author concludes that a special centre for convergence exists in the oculo-motor nucleus. He believes that the complete absence of a tendency to fusion of the double images is indicative that the injuries were received in the respective commissural fibres, causing interruption of the full function of convergence. Gutierrez-Ponce<sup>173</sup><sub>Jan.</sub> has observed a *paralysis of the right rectus externus*, first noticed the day following a fall

upon the occiput, in a boy affected with a chronic otitis of the right side. Iodide of potassium and stimulating friction having aggravated the condition, local treatment addressed to the ear was begun with immediate improvement. Two four-minute *séances* with a galvanic current of 8 couples, from the brow to the closed lids, completed the cure.

A case of *paralysis of the left abducens*, probably consequent upon a contusion of the occiput, is reported by Feilchenfeld.<sup>353</sup>  
The probable cause, he thinks, was a circumscribed central hæmorrhage. Under iodide of potassium and electricity perfect cure resulted. Eissen's<sup>353</sup><sub>July</sub> case of *nuclear paralysis* in a young man 22 years old, as the result of a fall upon the forehead at the age of 2 years, is remarkable for its etiology and the clear clinical picture maintained unchanged for twenty years. It is also interesting from the co-existence of a state of irritation of the internal muscles of the eye, with a paresis of the superior rectus and complete paralysis of all the exterior muscles supplied by the oculo-motor. He regards this case as corroborating the results obtained by Kohler and Pick in studying the regional anatomy of the nuclei of the oculo-motor nerve. Nieden<sup>190</sup><sub>June</sub> mentions a case of *recurring periodic paralysis of the facialis and abducens* in a woman of 36 years. Within six years the facial was affected twice, while the abducens was involved once on each side. The attacks were preceded by intense occipital headache, which ceased with the development of the paralysis. He ascribes the cause to a circumscribed exudate in the floor of the fourth ventricle; under appropriate treatment (iodide of potassium and electricity) he believes that this was rapidly re-absorbed.

Bouveret and Curtillet<sup>211</sup><sub>Sept. 14</sub> report a case of *diplopia of sudden onset*, in which double vision with crossed images was observed to the left, right, and in front, evidently due to paresis of the two internal recti. It was observed, however, that in monocular vision each eye possessed a full range of mobility; and that in binocular fixation of a very near object, as well as in fixation at a distance of 80 to 100 centimetres, the median diplopia disappeared. It was therefore evident that the paresis of the internal recti was manifested only when in associated action with the corresponding external muscles. This condition they judge to be due to a minute area of embolic softening in the pons directly at the point of

crossing of the fibres from each side connecting the nucleus of the sixth pair with the trunk of the third pair of the opposite side.

A case of *progressive nuclear ophthalmoplegia* in a woman 41 years of age is reported by Beaumont.<sup>47</sup> Milliken<sup>59</sup> records a case of *complete paralysis of the lateral movements of both eyes*, while ability to converge remained intact. The patient was a man aged 33 years, who had been addicted to the excessive use of alcohol, but denied having had syphilis. The optic disks were of a "slightly-deepened pearly color." The case is interesting as most probably being of nuclear origin. A case of *recurrent ocular palsy* in a woman 60 years of age is recorded by Paterson.<sup>6</sup> The author says that "the interest of this case lies, perhaps, in the age of the patient, the long interval between the recurrences, and the fact that the abducens was separately involved." In Böttiger's case<sup>368</sup> of *progressive chronic paralysis of the ocular muscles* in senile dementia, post-mortem examination revealed degeneration and atrophy of the lower nuclei in the crus cerebri. With the exception of the degeneration of the ascending root of the left fifth nerve, the medulla was unaffected. A case of unusual interest is that of *unilateral total ophthalmoplegia* following influenza, reported by Schirmer.<sup>353</sup> Complete paralysis of the oculo-motor, trochlear, and abducens, with paresis of the trigeminus and of the facial, developed in one night. He attributes the symptoms to basal hæmorrhage in the middle fossa, calling attention to other reports demonstrating that hæmorrhages are not uncommon during this epidemic. Tacke<sup>276</sup> reports several cases of unilateral complete ophthalmoplegia, with subsequent loss of vision of the same eye. He also discusses the differential diagnosis and the localization of lesions producing these symptoms. A case of *central paralysis of the whole left third nerve and of some branches of the trigeminus and facial nerves*, in consequence of inhalations of coal-gas (CO), is reported by Emmert.<sup>214</sup> Almost complete recovery followed.

Milliken<sup>222</sup> is convinced that "muscular insufficiency is a much more common condition, associated with refraction errors, than has generally been supposed, and adds very materially to the difficulty of making suitable correction with glasses." Wright<sup>61</sup> thinks that for the *treatment of insufficiencies*, operative procedure

should be a "dernier ressort," and should consist in an "advancement of the weak muscle instead of *tenotomy* of the strong."

In referring to the immediate effects of "*complete tenotomy*" in the treatment of squint, Berry<sup>2</sup><sub>Mar. 22</sub> states that, as soon as the scleral attachment of one of the recti has been divided, the concomitant character of the squint is lost, and the degree of effect produced by the operation varies according to the direction of fixation. He found that the effect of the operation was greater as the fixing eye was moved from the middle line toward the corresponding side, and less when moved in the opposite direction. He believes the greater effect to be due to the insufficiency of the internal rectus resulting from the operation, but is at a loss to explain why it should continue to diminish after the axis of the deviating eye has crossed the middle line and is directed outward. Dabney<sup>59</sup><sub>Sept. 27</sub> has relieved a case of *insufficiency of the internal recti* by *tenotomy of both external recti*. The patient was a 13-year-old lad, who had but little relief with three previous corrections of his ametropia (+1 D.). In a case of convergent squint, with myopia, of seventeen years' duration, in a man of 52, after double tenotomy, Javal<sup>173</sup><sub>Feb.</sub> effected a complete restoration of binocular vision by stereoscopic exercises. Webster<sup>59</sup><sub>June 7</sub> reports a case of *paralysis of the superior oblique* in a 33-year-old man, cured by tenotomy of the superior rectus of the same eye. In the case of a man of 52 years with convergent strabismus of several years' duration, consecutive to a *temporary paralysis of the rectus externus of rheumatic origin*, attended with persistent homonymous diplopia, Nicolau-Barraqué<sup>24</sup><sub>June 1</sub> reports an immediate restoration of binocular vision after tenotomy of the rectus internus combined with advancement of the weakened antagonist. Motais<sup>3</sup><sub>Mar. 26</sub> suggests an improved method of practicing *muscular advancement for the treatment of strabismus*. After incising the conjunctiva and before section of the tendon, he passes sutures loosely through its upper and lower edges and thence through conjunctiva and the capsule of Tenon. Having next cut through the tendinous attachment of the muscle to within a millimetre of the median line on each side, he makes longitudinal cuts backward for 8 or 10 millimetres, thus leaving a central adherent fascicle 2 millimetres wide by 8 or 10 millimetres in length. The operation is finished in the usual way. In case the tendon fails to form a new attachment, and a second

operation becomes necessary, the search for the extremity of the muscle is thus rendered very easy by the integrity of the little central fascicle. Moreover, should the deformity have been over-corrected, the new adhesions can be broken without fear that the muscle will retract beyond the site of its original attachment.

Landolt,<sup>14</sup><sub>June 22</sub> our corresponding editor, Paris, France, reports the cases of two children in which the diplopia, resulting from *paralysis of one superior oblique muscle*, had induced *obstinate torticollis*, by the unconscious effort of the little patient to correct the confusion of images. In both cases varied medical and surgical treatment had been tried; but, unfortunately, the parents refused to have tenotomy performed.

Gardner<sup>61</sup><sub>Jan. 11</sub> protests "against hasty operative interference when nature, properly assisted by science, can and does accomplish the result." His method of treatment consists in *wearing of glasses* which correct the total ametropia, and in the *instillation of atropine* until parallelism is obtained, after which the dose of the mydriatic is decreased until accommodation is performed without over-convergence. In an analysis of 100 cases of *muscular asthenopia*, in which prisms were employed, H. D. Noyes<sup>90</sup><sub>Aug. 14</sub> found that the externi were affected in 92 cases, the interni in 4, while general weakness of all muscles was noted in 1. In 5 there was, in addition, a vertical error. A study of the refraction showed emmetropia in 47, hypermetropia in 25, and hypermetropic astigmatism in 21 instances. There were no cases of myopia, but 4 of myopic astigmatism existed. One example of antimetropia and 2 of mixed astigmatism were found. Among the general symptoms were headache (which often presented the singular feature of occurring on first waking and increasing during the day), vertigo, nausea, insomnia, melancholia, pain in remote parts, tenderness over orbital nerve, and nasal catarrh. The ocular symptoms were pain, blurring and unsteadiness of print, inability to look at moving objects or to look fixedly at any object, photophobia, unsteadiness of the globe, spasm of the accommodation, and conjunctivitis. In the treatment attention was first paid to the indications presented by the general health. Headache, which was present in more than one-half the cases, was in most instances relieved by the use of prisms; in some it was lessened and in a few it was not benefited.



Couch<sup>776</sup><sub>Jan</sub> has had *tenonitis follow an operation for strabismus*. Thirty-six hours after the operation sloughing commenced, and finally involved all the tissues down to the sclerotic, giving rise to the formation of a staphyloma. The author attributes the cause to bad hygienic surroundings. Vialet<sup>274</sup><sub>July, Aug.</sub> properly asserts that in the great majority of cases *after operation* upon a *squinting eye* its *visual acuity* may be decidedly *increased*. The small proportion which are not benefited by the operation are those of congenital origin, in which the fixation of the affected eye is uncertain and there exists profound alteration of the visual field. He thinks it is impossible to decide, in case of a strabismus with marked amblyopia, whether the optical defect is congenital or acquired. He agrees with Nuel in supposing the existence of an "unconscious psycho-cerebral mechanism of inhibition," which serves to neutralize double images, and which is capable of abolishing all the visual sensations resulting from excitation of certain portions of the retina. To this he ascribes the loss of functional power in an eye which has become deviated; and thus easily explains the improvement of vision by appropriate exercises after correction of the deviation by operation.

*Diseases of the Lids.*—Goldzieher<sup>190</sup><sub>Feb</sub> proposes the term "*amyotrophic ptosis*" to signify that form of ptosis occurring in otherwise healthy persons as the expression of trophic changes in the levator palpebræ muscle. He has observed 2 cases of this kind. Before resorting to a disfiguring operation like that of Pagenstecher, or Panas, he advocates the trial of a supporting apparatus, a rough idea of which has been suggested by one of his patients. From the upper margin of a horn spectacle-frame springs, at right angles to the latter, a horn plate with the free border made concave. When the frame is put well in place, it lifts the lid and prevents its subsequent sinking, acting the part of a crutch for the lid. A modification of the instrument, he thinks, may be of use in entropion spasticum. Fuchs<sup>204</sup><sub>May</sub> reports a number of cases of "*isolated*" *bilateral ptosis of spontaneous origin*. From the facts that the development and course are slow, that there is atrophy of the soft parts over and about the muscles (especially the skin), and that in some cases a slight degree of congenital ptosis has existed, the author believes the cause of the affection to be a peculiar muscular atrophy, either myopathic or neuropathic,

which cannot be classed under any form of muscular atrophy hitherto known.

Grossmann<sup>187</sup><sub>July</sub> has seen *total obliteration of the palpebral opening* result from the healing of an extensive burn that involved the edges of both lids and destroyed the cornea and conjunctiva. There was scarcely any external scar visible, and the skin covered the orbit in such a manner as to give the case an appearance of a congenital malformation.

Stieda<sup>190</sup><sub>July</sub> has repeatedly found *acari follicularum in the follicles of the ciliae in man*. The fore part of the body was buried in the depth of the follicle, the hind part protruding often from the orifice. He thinks that the presence of the parasite is more frequent than is generally supposed, and doubts its absolute harmlessness. Maher<sup>1000</sup> reports a case of *congenital cyst of the lower eyelid with microphthalmos* observed in an infant. Emmert<sup>214</sup><sub>Jan. 15</sub> has observed a rare case of *involuntary reflex movement of the upper lid*, which occurred whenever the mouth was opened by moving the lower jaw.

A case of *sarcoma of the eyelids* in a maiden lady of 72 years is reported by Maher.<sup>1000</sup> Examination revealed a smooth, semi-elastic growth, composed of three lobes, which extended from immediately beneath the right supra-orbital arch downward into the eyelids between the skin and tarsal cartilage. The mass was about the size of a "pigeon's egg." Over the position of the right lachrymal sac was a hard tumor about the size of a large pea; and in the lower eyelid there was a growth consisting of two lobes (similar to that in the upper eyelid, but not quite so large), which extended from the margin of the orbit almost to the edge of the lid. The skin was everywhere movable and the growth in the upper lid was not continuous with that in the lower. The condition of the left lower and upper lids was similar to that of the right, but the tumors were not quite so large. The conjunctivæ were slightly hypertrophied. The lymphatics along the borders of the sterno-mastoids and in front of the ears were somewhat enlarged. Five months later the growths had increased in size, but the lymphatics appeared normal. The growths on each side were removed on separate occasions, six months apart, but recurrence in all four lids was found eight months after the second operation. A study of the growths showed all the histological

appearances of a large round-celled sarcoma. Rumschewitsch<sup>353 Oct.</sup> describes a number of cases of rare neoplasms of the lids. His list embraces adenoma, granuloma, adenoma of Krause's glands, adenoma of the sebaceous glands, atheroma of the lower lid, adenoma of the modified sweat-glands (Waldeyer) of the margin of the lid, dermoid of the lower lid, myxoma of the upper lid, papilloma of the margin of the upper lid, and adenoma of the Meibomian glands.

Van Duyse<sup>171 Oct. to Dec., '89</sup> notes a remarkable instance of localized *elephantiasis of the right superior lid*, occurring in a female patient of 8 years.

Friedenwald<sup>347 Sept.</sup> has seen *phlegmonous gangrene of the upper lid*, in a child  $2\frac{1}{2}$  years old, result from a scratch of the temple, occurring sixty hours after the injury. Valude<sup>152 Jan. 10</sup> reports a case of gangrenous phlegmon of the lids and orbit followed by septicæmia and death. The patient, a man 26 years old, had fallen upon the sidewalk and received a small wound in the right superciliary region. Despite prompt enucleation, with the institution of active constitutional treatment, when first seen, thirty-six hours after the injury, the patient succumbed to septicæmia two weeks later. Ransohoff<sup>190 May</sup> reports a case of *gummous disease of both lids* which was interesting on account of its resemblance to *ulcus rodens*. *Grafts from the skin of a frog* have been successfully employed by Gillet de Grandmont<sup>173 July</sup> to cover the raw surfaces *in a blepharoplastic operation after extensive burn*,

Gradle<sup>115 Mar.</sup> distinguishes clinically *two forms of blepharitis*,—an *ulcerative* and a *non-ulcerative* or squamous. For the treatment of the ulcerative form he advocates the use of nitrate-of-silver stick. In the squamous variety he obtained the most satisfactory results from the application of a vaseline ointment containing 3 per cent. each of sulphur and resorcin.

G. Harlan<sup>9 Aug. 9</sup> describes a new *operation performed for symblepharon* resulting from a burn. The lower lid, which was adherent to the eyeball, was first dissected from the globe and then the skin cut through, except at the attachments at each end. A flap of skin of sufficient size was now brought from below and turned up so that the fresh surface was applied to the lid, and the skin surface took the place of the conjunctiva. The author states that the result proved very satisfactory. Zirm<sup>8 Apr. 3</sup> reviews the indications for

"*blepharotomy*" as recommended by von Stellwag, and details the method, giving illustrative cases. He advocates the operation in functional blepharospasms, such as spastic and senile entropion, and that form occurring under the bandage after operations on the globe, but adds that it is contra-indicated when there are decided structural changes.

E. Jaesche<sup>254</sup><sub>Dec., '89</sub> proposes, for the *treatment of trichiasis and distichiasis* of the upper lid, a modification of the method originally devised by his brother; and has invented for it a clamp-forceps resembling somewhat in general form the lid-clamp of Desmarres. The essential feature of the operation is the separation of the palpebral margin in the form of a narrow ribbon, which is then

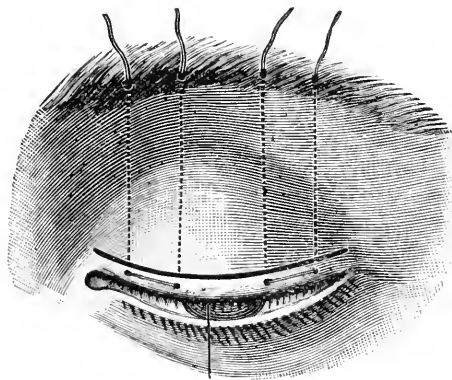


FIG. 1.—LANDOLT'S OPERATION FOR DISTICHIASIS.  
(*Archives d'Ophthalmologie.*)

twisted upon its axis through one-quarter of a circumference and fixed in this position by a few sutures. In cases in which the lower lid is at fault he practices a slight modification of his own operation, already described several years ago. Pincus<sup>190</sup><sub>Sept.</sub> attributes to technical mistakes alone the failures reported in Jacobson's operation for trichiasis. Good results

have been obtained by Franke,<sup>31</sup><sub>May 27</sub> in a case of trichiasis and distichiasis, by the transplantation method of Thiersch and Eversbusch. A new operation for distichiasis is described by Landolt, corresponding editor in Paris, France.<sup>274</sup><sub>Jan., Feb.</sub> He first divides the lid into two layers, the anterior comprising the skin and subcutaneous cellular tissue and including the line of offending ciliae, the posterior formed of the orbicularis, the tarsal cartilage, and conjunctiva. This is accomplished with the bistoury and scissors, and is carried as far as possible in an upward direction. Next an incision is made in the anterior layer from the external to the internal angle, parallel with and a few millimetres from the ciliary border. (Fig. 1.) In the third step, having cut the lashes as short as possible, he slides up

the narrow lower strip beneath the upper flap, and fixes it well up upon the denuded surface by two sutures. Each suture, which is threaded with two

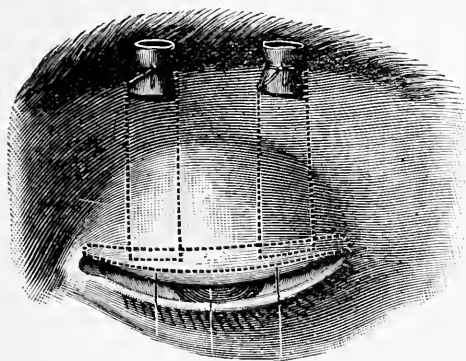


FIG. 2.

LANDOLT'S OPERATION FOR DISTICHIASIS.  
(*Archives d'Ophthalmologie.*)

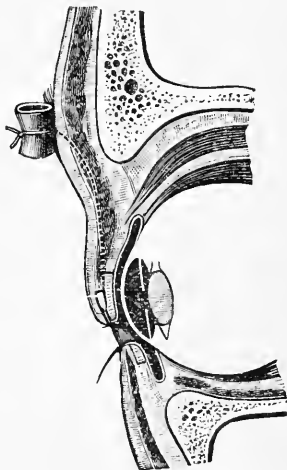


FIG. 3.

needles, is carried sufficiently upward subcutaneously to emerge in the eyebrow, where the ends of each are fastened over a quill, as shown in Figs. 2 and 3. By this manœuvre the end of the upper flap descends over the lower and forms a new palpebral margin. In a few days the final step of

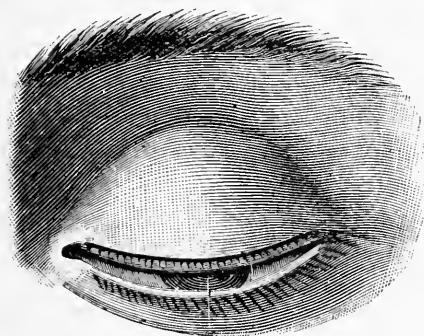


FIG. 4.

LANDOLT'S OPERATION FOR DISTICHIASIS.  
(*Archives d'Ophthalmologie.*)

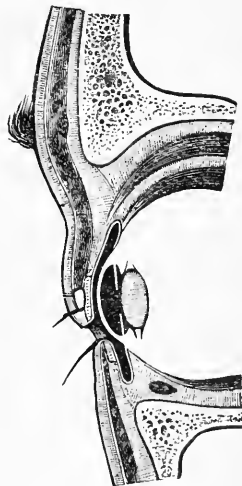


FIG. 5.

the operation is completed by an incision about 1 millimetre from the new palpebral border. (Figs. 4 and 5.) This liberates the

imprisoned lashes and gives them a new position about a millimetre above the palpebral margin, from which they are now separated by a band of cutaneous tissue.

Nicati<sup>274</sup><sub>Mar., Apr.</sub> describes a modification in his own method of palpebral marginoplasty, which consists in taking the flap from the opposite lid and leaving the base in its original position until adhesions have formed in the new point of attachment. He then severs the connection which has meanwhile fastened the two lids together. Tripier<sup>173</sup><sub>Mar.</sub> describes a method of blepharoplasty, which is most graphically shown by a series of sketches. Bevans<sup>6</sup><sub>Apr. 5</sub> gives a new *operation for the relief of entropion of the upper lid*. The novelty consists in the rotation of a wedge-shaped bridge of tissue, causing complete alteration in the direction of the ciliæ. In cases of *cicatricial ectropion of the lower eyelid*, Tweedy<sup>6</sup><sub>Dec. 21, '99</sub> obtained satisfactory results by making a double curved incision from the outer canthus downward and outward over the malar prominence, and a second parallel incision about 6 to 8 millimetres to its inner side, carried through the whole thickness of the everted lid. The flap thus formed was dissected up, remaining attached only at the lower end. A single straight incision was then made obliquely across the cicatrix nearly parallel to the lid-margin, the outer end reaching to the innermost curved incision. The lid and the adjoining skin are then separated from the subjacent tissues, thus allowing the cut surfaces at the sides of the flap to be brought closely together and united by sutures, and correcting the eversion of the lid. The gap left by drawing up the lower lid is filled by turning the flap previously made inward toward the nose and securing it in position by a few sutures. Pooley<sup>59</sup><sub>July 26</sub> has operated successfully for ectropion resulting from cicatricial contraction of the lower lid. He employed the sliding-flap method, obtaining the desired portion from the temple. Ray<sup>61</sup><sub>Oct. 11</sub> has operated successfully by Wolfe's method upon a case of cicatricial ectropion resulting from a burn.

In practicing Snellen's operation for ectropion, Grand<sup>228</sup><sub>Feb. 16</sub> suggests some modifications which, he asserts, improve the chances of permanent success. He advises that the silk suture should be previously soaked in a solution of sublimate, a precaution which will prevent swelling and suppuration. Again, he thinks that the usual period of four days is too short a time for the suture to

remain in place, and prefers to leave it untouched for seven or eight days, tightening it from time to time by increasing the thickness of his roller-compress.

*Diseases of the Conjunctiva.*—Emmert<sup>214</sup><sub>Jan.15</sub> has observed an “essential shrinking” of the conjunctiva in a woman 58 years old, and asserts that only 2 or 3 cases of this character have been heretofore described.

Wagenmann<sup>204</sup><sub>May</sub> adds to the 2 cases already reported by Pagenstecher (1883) and Weiss (1889) another instance of *ocular inflammation caused by hairs of the caterpillar*. As in Pagenstecher’s case, the affection closely simulated tuberculosis in its clinical and even microscopical appearances, the process, however, being more strictly confined to the conjunctiva, with but slight involvement of the iris. The histological formation of the small, grayish nodules was that of tubercle, but no tubercle bacilli could be found. Several of the nodules, however, were found to contain fine hairs, which the history of the case made probable were caterpillar-hairs. The patient made a good recovery.

A careful histological study of a *subconjunctival lipoma* is given by Querenghi.<sup>274</sup><sub>Jan.,Feb.</sub> The patient was a man 59 years old. The tumor had been first observed twelve to fifteen years before its removal. According to this author, the advanced age of the patient and the absence of exophthalmos seem to refute the conclusions of Saemisch, Hock, de Wecker and others, that these growths are either congenital or are found only in the first years of life. Two cases of sarcoma of the conjunctiva are reported by Carmalt.<sup>59</sup><sub>Aug.9</sub> A pediculated polypoid sarcoma of the conjunctiva is reported by Bock.<sup>190</sup><sub>Jan.</sub>

Andrews<sup>59</sup><sub>Aug.9</sub> made a study of *cyst-like bodies* removed from the conjunctiva of a child 5 years of age, whose mother and brother had had trachoma. He found them to consist of hypertrophied conjunctival tissue. Phillips<sup>207</sup><sub>Dec.,’89</sub> has seen a case of cystic tumor of the conjunctiva resulting from a blow in the eye with the bristles of a hair-brush. The growth, which was beneath the conjunctiva to the outer side of the cornea, was yellowish in color and about the size of a “split pea.” A free opening was made, which was followed by the escape of “some glutinous water.”

A case of primary chancre of the conjunctiva in a woman 45 years of age is reported by Marlow.<sup>1</sup><sub>Mar.1</sub> The patient had in charge

an infant that was covered with a papulo-squamous syphilitic eruption.

Weeks<sup>78</sup><sub>Aug.</sub> re-asserts that he has found a distinctive *bacillus* in the secretion present in "*pink-eye*."

Culbertson<sup>347</sup><sub>Jan.</sub> operates for *pterygium* by tearing or clipping the apex close to the cornea and dividing the flap back to its base. No conjunctival sutures are used, the "wing" being left free in the bed made by the operation. A collyrium of sulphate of copper, cocaine, and boracic acid is employed to hasten the shrinkage of the blood-vessels.

Knapp<sup>249</sup><sub>Jan.</sub> had the exceptional opportunity of studying a case of *tuberculosis of the conjunctiva* occurring in a 19-year-old boy. There was no family history of tuberculosis. The patient was subjected to repeated colds in the head and attacks of hoarseness. Upon examination of the left eye, the inner edge of both lids, from the commissure to 2 or 3 millimetres beyond the punctum lachrymale, was found uneven, pale, and presenting small, rounded elevations and ulcerous depressions, partly covered with scabs. The mucous membrane of both lids, especially the fornix, was dark red, somewhat swollen and uneven, and beset with small, grayish-red nodules resembling trachoma granules. In the mucous membrane of the upper lid there were two ulcers, one near the free edge of the tarsal conjunctiva, with slightly projecting nodules over its surface, showing decay on the crests of some of the nodes and in the tissue between them. The second ulcer, which was the deeper, showed extensive necrobiosis in the centre, with slightly raised, uneven, nodular edges. Excision of the tissue surrounding and including the larger ulcer was performed, and an examination of the specimen with the microscope which was made by Weeks showed two or three tubercle bacilli. Two weeks later the swollen portion of the inner edge of both lids and the base and walls of the remaining ulcers were excised, the entire surface of the wound burned with the galvano-cautery, and all the visible nodules scattered over the conjunctiva were destroyed. The microscope showed the superficial layers of the growth densely packed with lymphoid cells, which, in clusters and bands, penetrated the healthy tissue as far as the neighborhood of the Meibomian glands, but nowhere between the acini. In many places the lymphoid cells were accumulated in the shape of round patches, nodules, small tubercles;



some were covered with epithelium, others were superficially ulcerated, with ragged borders. The intercellular substance, which was exceedingly scant, was more homogeneous than dotted or striated. The centre of some of the masses showed granular detritus, in which multinucleated (giant-) cells could be noticed. In specimens prepared according to Koch-Ehrlich, most of the bacilli were strewn singly over the field, but in the giant-cells they lay in clusters of from three to six or more. Immediately after removal of the small ulcer, a minute particle of the tissue was introduced into the anterior chambers of the eyes of two rabbits. For four weeks there was no irritation, but at the end of this period there appeared a great number of miliary nodules in the irides of three of the eyes; three weeks later, the corneæ, which bulged at the seat of traumatism, burst and became covered with cheesy material. The eyes were enucleated, and the nodules of the iris and the cheesy secretion were found to contain a large number of bacilli. One of the rabbits dying, an examination showed a limited number of glassy, miliary tubercles in the visceral pleura. The author does not consider the case one of primary tuberculosis, as symptoms of nasal and laryngeal tuberculosis were noticed long before the manifestations of the affections in the conjunctiva.

Burnett's <sup>249</sup><sub>Apr., July</sub> case of tuberculosis of the conjunctiva occurred in a colored boy 15 years of age. No definite antecedent history was obtainable, but a large scar was visible on the left cheek along the ramus of the inferior maxilla. There was complete symblepharon on the left side, but the integument and even the edges of the lid were unaffected. No portion of the eyeball was visible, although it could be felt through the soft, thickened lids as a doughy, ill-defined mass. On the right side the symblepharon was not so extensive, but both retrotarsal folds were abolished. The conjunctiva was thickened and nodular, and encroached upon the cornea above and below. The corneal surface was grayish and the epithelium was thickened. The patient's general health seemed perfect. Examination of the chest revealed a few moist râles in the right side, posteriorly. A study with the microscope of a piece of the excised conjunctiva showed giant-cells and tubercle bacilli. Scrapings from the surface of the diseased tissue contained many bacilli. The author says that, "from a histological stand-point, the genuine tuberculous character of the affection was clearly estab-

lished, and the clinical history warrants the opinion that it is localized and primary."

De Schweinitz<sup>112</sup><sub>Jan.</sub> has had *symblepharon as a sequel of purulent ophthalmia*, adhesions having taken place between the conjunctiva of the upper lid and the cornea at sites of previous ulceration.

Andrews<sup>1</sup><sub>June 21</sub> examined the secretion of the conjunctiva in 72 cases of *purulent ophthalmia* in adults and in 122 in the newborn, and in every instance detected the gonococcus; while, in but 3 out of 9 cases occurring in infants between 2 and 3 months of age, was he able to demonstrate its presence. The author thinks this "shows that, while there is undoubtedly a purulent conjunctivitis in infants, occurring two or three months after birth, nearly always of a mild type and yielding to simple treatment, in the secretion from which the gonococcus cannot be demonstrated, there are also cases of true gonorrhœal ophthalmia in adults of a comparatively mild type, but in which the gonococcus is surely demonstrable. Hence, in some rare instances, the presence or absence of the gonococcus, and not the clinical picture, must decide the diagnosis." In the treatment of the affection he advises uninterrupted application of cold compresses and cleansing of the eye as frequently as is necessary to prevent accumulation of secretion. For this purpose he prefers a saturated solution of boric acid, applied by means of a fountain-syringe, giving the apparatus sufficient height to produce a gentle stream. In more severe cases he instills a 2-per-cent. solution of nitrate of silver, and should the cornea become lazy he uses a solution of atropia. The author condemns the employment of the solid stick of nitrate of silver, and emphasizes the importance of protecting the healthy eye.

In a series of observations upon the preventive treatment of *ophthalmia neonatorum*, Peuch<sup>236</sup><sub>Feb.</sub> has made careful comparison of the relative value of the well-known method of Crédé and the newer plan of Hégar-Korlin, which consists of antiseptic lavement of the face and eyelids with Van Swieten's solution (corrosive sublimate, 1 to 1000). One series of 50 infants was treated alternately by the two methods, and out of this number only 2 cases of ophthalmia occurred: one treated according to the Hégar-Korlin method by the nurse during the doctor's absence; the other treated with the silver solution, though not until two hours after the child's birth upon the street. A second series of 26 infants

was treated entirely by the method of Hégar-Korlin without any occurrence of the disease. The same success attended the treatment of a third series of 9 infants by the Crédé method. His mode of practicing the latter method is to instill a single drop of a 1-to-50 nitrate-of-silver solution into each eye of the babe as soon as it is born, even before separation from the placenta. He finds only occasional conjunctival irritation following the Crédé treatment, and this readily yields to boric-acid washing. He thinks that these results show the equal value of the two methods; but for private practice he recommends the simpler and less alarming plan of Hégar-Korlin, reserving the silver treatment for hospitals and for times of grave epidemics of the disease.

Budin<sup>415</sup><sub>No.15</sub> speaks highly of the employment of naphthol A (1 to 5000) in *purulent conjunctivitis*.

Burnett<sup>59</sup><sub>Feb.22</sub> adds his voice for both general and special prophylaxis against ophthalmia neonatorum, and thinks that the health office in his own city could render great aid in this matter by causing the distribution of cards similar to those furnished by the eye infirmary at Sheffield, which read as follows: "If a baby's eye run with matter and look red after birth, take it *at once* to a doctor. *Delay is dangerous*, and one or both eyes may be destroyed if not *treated immediately*." We cannot emphasize this advice too much, and for this reason give the substance of the card in full, in hopes that it may thus reach a great number of at present unprotected districts. In the treatment of ophthalmia neonatorum, F. T. Smith<sup>849</sup><sub>May</sub> places the greatest reliance on the continuous application of cold and the use of weak solution of silver. Constantin Paul<sup>3</sup><sub>June 4</sub> effects ocular irrigation by making use of a bottle suspended above the child's head, from which a simple decoction of aromatics is siphoned. To this treatment he adds a collyrium of tannin, by which method he claims to effect a cure in three days, if the disease has been taken at the start.

Darier<sup>171</sup><sub>July, Aug.</sub> testifies to the good results obtained by the galvano-cautery in grave corneal ulceration occurring in purulent ophthalmia. Combined with frequent cauterization with nitrate-of-silver solution (2 or 3 per cent.) this mode of treatment in his hands has given most unhopd for results.

In view of the fact that in other countries stringent regulations have been adopted concerning the course to be pursued by

midwives and nurses in dealing with ophthalmia neonatorum, Howe<sup>99</sup><sub>Aug.1</sub> deems it desirable to obtain the passage of a law similar to that recently enacted in New York, which reads as follows:—

“Section 1. Should any midwife or nurse having charge of an infant in this State notice that one or both eyes of such infant are inflamed or reddened at any time within two weeks after its birth, it shall be the duty of such midwife or nurse so having charge of such infant to report the fact in writing, within six hours, to the nearest health officer, or some legally-qualified practitioner of the city, town, or district in which the parents of the infant reside.

“Section 2. Any failure to comply with the provisions of this Act shall be punishable by a fine not to exceed \$100.00, or imprisonment not to exceed six months, or both.

“Section 3. This Act shall take effect on the 1st of September, 1890.”

In the treatment of gonorrhœal conjunctivitis, Kirkpatrick<sup>284</sup><sub>Nov.</sub> thinks that “applications of nitrate of silver are to be avoided until the disease is on the decline,” believing that cauterization, even of a mild character, is certainly contra-indicated. He says that attendants “should not be permitted to use a spray apparatus for cleansing the *cul-de-sacs*, lest some of the spray rebound and in this way inoculate their own conjunctivæ.” Trousseau<sup>173</sup><sub>May</sub> calls attention to an insidious, and therefore dangerous, form of blennorrhagic conjunctivitis, characterized by a slightly-marked swelling of the lids, a very slight discharge, intense chemosis, and a slow development of corneal changes. In one case he has observed, the only disturbing symptom was the chemosis, which he therefore regards as a sign of extreme importance. Whatever be the initial symptoms, he believes it is wise to consider every conjunctivitis in patients with urethral blennorrhœa as being due to specific contagion.

Howe<sup>1002</sup><sub>Feb.</sub> has made a spectroscopic examination of the blood in a series of 16 cases of *catarrhal* and 13 of *phlyctenular conjunctivitis*, and found a greater or lesser degree of anæmia in 14 of the former and 12 of the latter.

In the treatment of phlyctenular conjunctivitis, if seen in the early stages, Gorecki<sup>177</sup><sub>May 20</sub> recommends as a hygienic means the avoidance of all external irritants by the use of smoked glasses. Locally, he advises the instillation of a drop of a 5-per-cent. solution of cocaine, followed by the insufflation of a little calomel upon the

phlyctenulæ. In about ten minutes the film of calomel is removed from the lower conjunctival *cul-de-sac*. No collyrium is to be employed. In phlyctenular keratitis with photophobia he instills 1 or 2 drops of a solution of atropine (1 to 200), discontinuing its use as soon as the acute state has subsided. At the same time, he washes the conjunctiva with warm boric solution four or five times a day. Constitutionally, he most properly prescribes fractional doses of calomel (15 centigrammes— $2\frac{1}{3}$  grains—in 10 powders, to be taken every hour). This dosage is repeated in ten days. If the disease be taken in time and cauterizations and irritant collyria be avoided, he claims that the patient will be cured in three or five days. Ayres,<sup>61</sup><sub>May 31</sub> finds in bichloride of mercury a most valuable remedy for the treatment of granular lids, acute catarrhal and phlyctenular conjunctivitis, keratitis, and blennorrhœa of the lachrymal sac. Randolph<sup>849</sup><sub>July</sub> states that "in all forms of conjunctivitis, more particularly that form frequently of scrofulous origin, namely, conjunctivitis phlyctænulosa, there is no better remedy than a mild solution of corrosive sublimate."

Shöbl<sup>190</sup><sub>Apr.</sub> distinguishes anatomically two main *groups of conjunctivitis hyperplastica*; the first characterized by simple uniform thickening of the epithelial layer of various degrees, with cellular infiltration or further connective-tissue changes in the subepithelial layer; the second, by proliferation of epithelium and its penetration by finger-like processes into the subepithelial tissue. In the second group, according to the number of these epithelial processes and the degree of differentiation of the infiltrated lymphoid cells in the subepithelial tissue, several subdivisions are made. In this category he puts catarrhus vernalis. In the first group, he says, xerotic conditions often result; in the second, the true hyperplastic condition may exist unchanged for years. Regarding catarrhus vernalis the author's results differ from those of most investigators in the following points: considerable involvement of the corneal conjunctiva existed in almost all cases, while the typical course was observed in only a few instances; the consequences are not always harmless, cicatricial thickening often remaining as a permanent result. He proposes for this affection the name "kerato-conjunctivitis hyperplastica vernalis."

Bedoin<sup>184</sup><sub>May 15</sub> speaks highly of the employment of *atomized solutions in the treatment of acute or chronic inflammations of the*

*conjunctiva and cornea.* He employs for acute conjunctivitis solutions of boric acid (1 to 30 or 1 to 40) and of sulphate of zinc or copper (usual collyrium strength). For certain forms of chronic conjunctivitis, marginal blepharitis, and keratitis with maculæ, he prefers a solution of iodine in increasing doses, beginning with a mixture of iodine 1 part, iodide of potassium 4 parts, and distilled water 200 parts. He says that some of these atomized solutions act by setting up a temporary local reaction, sometimes quite intense, which seems to play an important part in the therapeutic effect. Cocaine may be employed before the atomization to combat the pain thus caused. In certain forms of conjunctival inflammation, and especially in keratitis with persistence of acute inflammatory symptoms, it seems prudent to wait until the acute stage is passed before using the atomizer. Slight pustular conjunctivitis may be caused occasionally by the use of the iodine spray, but it is benign, and passes away in the course of a few days.

Grandclément<sup>211</sup><sub>Feb. 23</sub> observed 3 cases of *grave conjunctivitis, following influenza*, which were characterized by smarting of the lids, absence of secretion, a violaceous color of the *cul-de-sacs*, and varicose condition of the conjunctival vessels.

In a case of *non-specific conjunctivitis* in a child 1 month old, Hogner<sup>366</sup><sub>May 8</sub> has had an excellent result from 10-per-cent. glycerite of iodoform instilled after thorough cleansing of the conjunctival sac.

Rählmann<sup>171</sup><sub>Sept., Oct.</sub> insists upon the recognition of two distinct diseases which are often classed together under the name of "*granular conjunctivitis*,"—simple follicular conjunctivitis and trachoma. The virus of the latter, he asserts, is directly transmissible and is entirely independent of atmospheric influences. He believes that they should be carefully distinguished, even in their clinical aspects. Both can be cured without leaving any traces; both may leave cicatrices; both are infectious, and transitional stages from one to the other may be observed. In trachoma he recognizes an acute and a chronic form, the latter of which is comprised in three stages. Pannus of the cornea, he asserts, is not a simple traumatic irritation, but is a follicular process with lymphoid infiltration, analogous to the alteration of the conjunctiva; a predisposition is necessary for its production. The disease, he thinks, is undoubtedly contagious, especially in the acute and the second stage of

the chronic form ; but there is also, without doubt, a regional predisposition in the tissues, as shown by the fact that in the same patient one eye may remain healthy for years, while the other is subject to trachoma. He admits that the coccus of Michel seems to be the virus of the disease. Schmidt-Rimpler<sup>78</sup><sub>Aug. 31</sub> agrees with the preceding author in the main points of his paper, but has never seen transitional cases. In the ordinary follicular conjunctivitis the mucous membrane takes scarcely any part in the process, and the follicles are found only on the lower lid. This form, he asserts, is very common, having found it in 27 per cent. of a large number of students whom he had examined, while cicatricial trachoma was found in only 1 per cent. He follows Sattler in denying the specific action of Michel's coccus. He thinks that the often observed immunity of one eye is more reasonably ascribed to a previous slight attack, which has been cured without leaving any traces. Contrary to the assertion of Chibret, he has seen trachoma endemic even at an altitude of 350 metres above the sea. In statistics in 1800 cases of the disease, he finds that in 27 per cent. only does vision reach or surpass one-half, while in 45 per cent. it reaches only one-fourth, and in 27 per cent. falls below one-twentieth.

Sattler<sup>78</sup><sub>Aug.</sub> has been able to verify for Southern Germany the law established by Chibret concerning the immunity given by a high altitude. He asserts that a certain elevation above the sea-level offers the best conditions for cure, but thinks there is no absolute immunity from this disease. His studies make him believe that the movements of soldiery play a great rôle in the propagation of this malady, inasmuch as he has found it endemic especially where companies of soldiers make frequent halts. Chibret<sup>78</sup><sub>Aug.</sub> asserts that observers among the many scattered Celtic peoples of Europe agree in reporting the singular immunity from this disease which this race enjoys. He believes that "the trachomatous virus, but feebly obnoxious to the Celtic race, loses all virulence for this race after passing through the eye of a Celt."

Swan Burnett<sup>78</sup><sub>Aug.</sub> reports that among 6000 cases of ocular disease in the American negro he found only one case of true trachoma. He considers it to be a dyscrasia similar to, but not identical with, tuberculosis. He has observed it frequently among the Irish-American population, even at an altitude of 350 to 400

metres. Pitts<sup>568</sup><sub>Sept</sub> gives a brief synopsis of trachoma, saying that he has observed a few cases in the negro, considering that such immunity is not racial, but that it is due "to a comparatively short existence as a race among civilized people, and to the further fact that the disease does not exist in their native country." Hope<sup>1000</sup> asserts that the aborigines of Australia never suffer from ophthalmia, and that when their sight is damaged or lost it is usually the result of accident. He believes cataract to be more common in Western Australia than in cooler climates, ascribing the cause to the heat and glare from the light, sandy soil. Reisinger<sup>204</sup><sub>May</sub> has studied the geographical distribution of trachoma in Bohemia, under circumstances that make his conclusions particularly interesting. His results differ from those of Chibret in several points. The limit of altitude beyond which trachoma ceases to exist he finds to be considerably higher than that given by Chibret,—350 metres. Even beyond his own limit, 450 metres, he has found that single rare cases occur. Moreover, Chibret's observation, that beyond a certain altitude trachoma, in spite of various unfavorable conditions, loses its infectious character or is rapidly cured, he does not find verified. He asserts that the disease occurs most frequently in the spring and summer, and that the coincidence of trachoma and malaria in many places is striking.

A most interesting account of *bacteriological studies* of the contents of the *follicles of trachoma* is given by Shongolowicz<sup>21</sup><sub>July 14, 21</sub>. By a peculiar staining method he has found rod-bacilli lying more frequently between, and more rarely within, the protoplasm of the lymphoid cells. The same bacilli were found in sections and in cultures. A characteristic of this bacillus, he explains, is the high refractive power at one or both extremities and the susceptibility of deep staining at these same parts, which gives the appearance, in the stained slide, of mixed cocci and bacilli.

In an article on "*Sandy Blight and Granular Ophthalmia*," T. A. Brown<sup>1000</sup> states that he "is inclined to the belief that the various forms of trachoma are modifications of the same disease, but differing in degree; and that one form may reproduce another form, modified by the manner of transmission and by the surrounding circumstances of the case." Of the disease known as "sandy blight," he says that "it is simply a muco-purulent conjunctivitis, and commences with a slight redness and itching of the conjunctiva



of the lower eyelid. This soon extends to the upper lid and the globe, and on the second day the eyelid swells more or less, according to the severity of the case. There is usually a considerable amount of pain about the third or fourth day. On evertng the upper lid, it is found somewhat roughened by the enlarged and swollen papillæ; a muco-purulent discharge exudes from the eye, but, unless in a very severe case, it is more of a mucous than a purulent character. Frequently, however, in constitutions debilitated by drink or disease, and with unhealthy surroundings, the disease takes on a decidedly purulent character, and the resulting trachoma (supposing the case is not properly treated) and pannus are of a far more serious character than in an ordinary case. All the symptoms fade away in about a fortnight with ordinary cleanliness, and not much discomfort remains, and in this freedom from any serious annoyance lies the danger." He considers that "one of the chief causes of the propagation by contagion is an atmosphere loaded with moisture, whether produced by evaporation after a hot day or from moisture exhaling from the body of a large number of people crowded together in badly-ventilated sleeping-apartments."

In Germann's 3 cases of trachoma <sup>July 21</sup> the infection is said to have been caused by dirt thrown into the conjunctival sac. Dirt and dust, he thinks, are some of the carriers of the specific micro-organisms of trachoma.

Bush <sup>113</sup><sub>Sept. 28</sub> states that he has treated, with excellent results, a large number of cases of trachoma, in Syria, by jequirity. He says that he has never provoked an inflammation sufficient to cause grave or irreparable results. He finds that the activity of the seeds decreases with age, and, therefore, he first employs an infusion of old seeds, which, if well borne, he gradually changes for one made of fresher material. G. L. Johnson <sup>249</sup><sub>Apr., July</sub> describes a new treatment for chronic trachoma. The first step consists in making a series of parallel incisions into the conjunctiva, by means of a three-bladed scalpel, after which an "electrolyzer," having two platinum blades, is employed. The blades are pressed firmly into the groove previously made and slowly drawn along the furrows from end to end, until all the incisions have been so treated. The lids are now washed free from blood, sprinkled with a 5-per-cent. cocaine solution, and dusted with calomel. Finally,

they are smeared with an ointment made of vaseline and hydro-naphthol (1 to 800), and the eye is bandaged with thick, moistened compresses. The author advises that the current employed should not exceed 50 milliampères. He says that he "has never yet had a case of trachoma, mixtum or papillare," in which this treatment has failed to answer his best expectations.

In granular conjunctivitis, Trousseau<sup>14</sup><sub>Apr. 20</sub> recommends, as topical applications, glycerite of tannin (1 to 10), solution of subacetate of lead (1 part to 10 of water), or corrosive-sublimate solution. Between cauterizations he prescribes cold compresses and antiseptic collyria. When the patient cannot be seen at least every other day he deems it necessary to cauterize as often as possible, and in the interval to prescribe, for use between the washings, an ointment to be introduced within the conjunctival sac once daily. This is to consist of 10 grammes (2 drachms 34 grains) of vaseline to 1 gramme (15 grains) of iodoform, oil of cade, yellow oxide of mercury, or carbolic acid; or, better still, 5, 10, or 15 centigrammes ( $2\frac{1}{3}$  grains) of sulphate of copper. Coquilles are to be worn constantly. For pain he recommends friction about the orbit night and morning with an ointment consisting of 3 grammes (46 grains) of extract of belladonna to 10 grammes (2 drachms 34 grains) of mercurial ointment. Codliver-oil is recommended for internal administration. If there be tendency to ulceration or abscess, the ointment is to be replaced by a collyrium of nitrate of pilocarpine (5 to 15 parts to 1000), with hot fomentations. Pitt<sup>347</sup><sub>Apr.</sub> prefers the method of expression, using for the procedure a diminutive pair of ring-forceps. As an auxiliary measure he employs thorough and frequent washing of the conjunctiva with a 1-to-3000 or 1-to-4000 solution of bichloride of mercury and the occasional use of yellow oxide of mercury or sulphate of copper as a stimulant. The writer says: "From an extensive trial, embracing cases in all stages of trachoma, I feel convinced that, if carefully and thoroughly used, a speedy cure without the destructive atrophy of the conjunctiva may be accomplished, often in a few weeks' time."

In those cases of granular conjunctivitis in which the inflammatory symptoms have subsided, and isolated or small collections of yellowish-white, cartilaginous granulations remain, Keyser<sup>760</sup><sub>Dec. 14, '99</sub> recommends "rasping" the nodules with pumice-stone, the opera-

tion to be repeated until the conjunctiva is smooth and in an apparently healthy condition.

A solution of naphthol (5 per cent.) is used with asserted good results by Economopoulos<sup>24</sup><sub>Nov. 2</sub> in the treatment of acute and chronic granular conjunctivitis. Every morning the lids are well washed with a brush soaked in the solution; a sharp irritation, lasting three to five minutes, follows, which is calmed by bathing the lids with fresh water. For pannus and corneal ulceration he employs the ointment of yellow oxide of mercury. Franke<sup>190</sup><sub>June</sub> states that he has made rapid cure of old granular conjunctivitis with entropion by excision of the diseased membrane and transplantation of a piece of thin skin. Noiszewski<sup>190</sup><sub>Feb.</sub> reports success in 4 cases of old indurated trachoma, in which he has replaced the conjunctiva of the upper lid by a piece of mucous membrane taken from the lip. The diseased tissue down to the tarsal cartilage was resected, and the new graft fixed in place by a few sutures. Several of the severe cases showed improvement in vision after a few weeks. In a later article<sup>190</sup><sub>Aug.</sub> he reports four additional operations with equally satisfactory results. He decides that the operation is not indicated if there is hope of success by the usual mode of treatment, especially when the cornea is intact and of normal sensibility. He finds that when indurating trachoma seems connected with pannus carnosus, relatively prompt and good results are obtained.

*Diseases of the Cornea and Sclerotic.*—Theobald<sup>764</sup><sub>Jan.</sub> reports the removal of several foreign bodies of an exceptional character from corneæ. In seven of the instances they were found to be parts of the capsules of minute seeds, and in one instance the foreign substance proved to be a portion of the wing covering of a small insect. Gorecki<sup>173</sup><sub>July</sub> has observed a case of traumatic rupture of the sclerotic, with subconjunctival hernia of the vitreous, which closely resembled a dislocated lens. The real nature of the protruding body was not determined until a blood-clot in the anterior chamber was sufficiently absorbed to permit a view of the lens, which was seen occupying its normal position. It was then found that the iris had been ruptured, and the torn edges were folded backward and probably imprisoned in the scleral wound.

The cause of a monocular diplopia, developed by one of his patients after injury, is attributed by Lucanus<sup>353</sup><sub>July</sub> to a circumscribed prismatic thickening of the cornea.

An elaborate study of the formation of *cysts in corneal cicatrices* is made by Czermak.<sup>204</sup><sub>Aug.</sub> He believes that this peculiar formation is always the result of the healing of a perforating corneal ulcer. His theory presupposes a perforation of the cornea with the formation of a marginal synechia of the iris. In the healing a funnel-shaped depression is formed on the inner corneal surface by the adhesion of the iris. The dilator muscle now begins to drag upon the healing tissue, while the increasing intra-ocular pressure tends to force it outward, so that crevices are formed through which the aqueous humor finds its way to the outer layers of the cornea, until blocked by the new surface epithelium, now sufficiently strong to prevent its escape. Cysts are formed by coalescence of these smaller cavities. The author remarks that if this explanation is correct, an operation to loosen the prolapsed iris with the destruction of the scar-tissue, if the affection be old, would form the only rational treatment.

In a study of the *etiology* of a case of *herpes corneæ*, Decker<sup>353</sup><sub>Mar.</sub> states that the facts that a hypertrophic catarrh of the nose co-existed, and that the recurrent attacks of keratitis were preceded by an acute exacerbation of the nasal trouble, which grew less intense and occurred at greater intervals after appropriate treatment of the nasal mucous membrane, lead him to conclude that the two affections stand in a relation of cause and effect to one another. He also assumes that the pathological changes in the peripheral nerves of the nose are propagated to the Gasserian ganglion and finally lead to its implication. In answer to the whole question the author is tempted to regard the disease as the outcome of some previous or co-existing infectious process.

A case of *leucosarcoma of the choroid* in a child 3 years old is reported by Bock.<sup>190</sup><sub>Jan.</sub> The differential diagnosis from glioma of the retina was made by examination of a piece of retinal tissue which was extruded through a perforation of the cornea; its structure was found to be unchanged.

Groenouw<sup>254</sup><sub>Apr.</sub> describes 2 cases presenting *stationary opacities in the centre of the cornea*, which macroscopically resemble the opacities in Adler's keratitis subepithelialis or Fuchs's keratitis superficialis punctata, but microscopically are seen to be solid epithelial and fibrous growths, and not an aggregation of minute

punctiform opacities, as in the latter affection. The seat of the lesion is subepithelial, but is not deeper than the most superficial portion of the proper corneal substance. The history of the cases shows that the defect stands in no causal connection with any inflammatory process. The author adopts the term "*Knötchenförmige Hornhauttrübungen*" (nodular opacities), first proposed by Förster.

Makrocki<sup>353</sup><sub>Mar.</sub> reports a case of peculiar corneal disease, similar to those described by Emmert as keratitis dendritica exulcerans mycotica, and by Hansen-Grut as keratitis ramiformis. He numbers the affection among the infectious diseases of the cornea, and believes that it can be diagnosed by the following structural peculiarities: From marginal foci opacities spread in the form of sulci arranged in a manner to resemble a system of canaliculi, with minute spots interspersed, these defects being subepithelial. He finds, however, that the connection of the single canaliculi cannot always be seen, though the opacity in the margins of the sulci is greater than in the axes. According to the course and accompanying symptoms, he distinguishes two groups: (1) the acute, ulcerative form (Emmert's cases); (2) the torpid, non-ulcerative form (Hansen-Grut's and the author's cases). He believes that the prognosis is fair, even in acute cases; for, though the opacities have a decidedly progressive tendency, they generally heal and are followed by considerable improvement of vision. The author objects to the name *keratitis dendritica* (Emmert), because it does not convey the exact idea of the anatomical picture, and proposes the name *keratitis sulcata mycotica*, in two forms,—*exulcerans sine acuta* and *non-exulcerans sine subacuta (torpida)*. He finds that the best therapeutics consists in mildly-antiseptic and soothing applications. If this prove inefficient, in addition to antiseptic washes with 1-per-cent. bichloride solution, eserine-vaseline (20-per-cent. strength) should be smeared into the conjunctival sac, as recommended by Emmert.

Stellwag<sup>8</sup><sub>Aug.14</sub> differentiates between the nummular form of herpetic keratitis, which he has described, and what he calls the "*punctate form*" of other writers, by the following characteristics: differences in size, form, color, and position of the eruption, and in the number of the foci, and difference in the course of the affections. He furthermore emphasizes in the nummular form the

inflammation and swelling by infiltration of the corneal limbus, which in severe cases extends as a vascular stratum of granulations on to the cornea,—a phenomenon which he says is not observed in the other form. He lays great stress upon the depth of the eruption in the nummular form, and the frequent co-existence of irritation of the iris, to which he gives the name uveitis anterior, and numbers it among the interstitial or uveal keratites. In another communication, Decker<sup>353</sup><sub>Oct.</sub> describes a second case of herpetiform inflammation of the cornea, and calls attention to the resemblance to Ransohoff's case (ANNUAL, 1890). Owing to certain anatomical peculiarities in the second instance, he gives to the affection the name "keratitis herpetiformis recidiva." An inflammation of the nasal mucous membrane seemed to be the causative factor in both. Furthermore, he considers as herpetiform inflammations the diseases of the cornea described by Stellwag, Adler, Fuchs, Reuss, and Groenouw; and he adds a case resembling the keratitis maculosa of Reuss. Although he believes all these affections to be of the same nature, he distinguishes three forms, as Stellwag does, but differs from this last observer in numbering Ransohoff's case with the two which he has himself described.

Kollock<sup>76</sup><sub>Sept.</sub> describes a form of *xerosis prevalent among negro children* in Charleston, S. C. The patients, who are usually scrofulous and emaciated, presented a pigmented condition of the conjunctiva, giving that membrane a dirty-white and yellowish-green appearance. The portion of the conjunctiva corresponding to the palpebral fissure is the darkest and is generally thickened toward the corneal margin. The ocular conjunctiva is relaxed and flabby, so that every movement of the globe throws it into folds or wrinkles; these are more marked laterally, but may entirely surround the cornea, being at times capped by silvery scales. The palpebral conjunctiva is not affected. The edge of the cornea is always hazed and frequently ulcerated below the surface, but at times the ulcerated ring is elevated as a soft, grayish ridge, which may be broader at its upper and lower quadrants. In some cases a partially opaque condition of the corneal epithelium gives the centre a bluish, hazy sheen. No iritis is present. There is no pain or photophobia, night-blindness being the sole subjective symptom noticed in a few cases. Treatment, which was usually followed by beneficial results, consisted principally in building up the weakened

constitution, associated with the local use of ointment of yellow oxide of mercury ( $\frac{1}{2}$  grain—0.032 gramme—to the ounce—32 grammes) and a collyrium of boric acid. Occasionally, when ulceration of the cornea was present, a solution of atropine (1 grain—.065 gramme—to the ounce—32 grammes) was instilled, but whether beneficial or not was uncertain. The author says that “this form of xerosis is interesting from the fact that it has only been seen among negro children; that there has never seemed to be reason to think it followed any attack of ophthalmia, but originated *de novo*; that the conjunctiva is never contracted; the cornea is more or less affected, but not destroyed; and that under proper treatment recovery will take place.”

A case of *keratitis subepithelialis* has been seen by Hodges.<sup>2 Feb.7</sup> The initial symptom consisted of a copious secretion resembling tears. Numerous fine dots, occupying the centre of the cornea, subsequently appeared. Vision was reduced to one-third. Atropine and mercury were employed. In two weeks' time sight returned to normal, and but faint traces of the affection were visible. Thompson<sup>2 Apr.12</sup> has seen a case of superficial keratitis produced by aniline violet. Wheelock<sup>59 July 26</sup> has seen 3 cases of trophoneurotic keratitis. In none was there any neuralgic element. He believes that treatment must necessarily look to restoration of the function of the nerve, which is best accomplished by the stimulating influence of the constant current, supplemented by strychnia. Locally, he employs bandages and hot-water compresses; while antiseptic solutions, he properly says, “may appeal to our religious aspirations to approach holiness.” Two cases of *keratitis superficialis punctata*, following high pyrexia in influenza, have been observed by Rosenzweig.<sup>190 May</sup>

Park<sup>106 Apr.</sup> reports 3 cases of *interstitial keratitis presenting unusual symptoms*. Pfister<sup>353 Mar.</sup> gives the summary of 130 cases of *keratitis interstitialis diffusa*, including 5 cases of *keratitis interstitialis annularis*, seen in Haab's clinic at Zurich. In the 5 cases of the annular form of the disease, 4 were over 20 years of age, the average age given by Vossius being between 5 and 20 years. He believes that its etiology remains unexplained. In 125 cases of the diffuse form, hereditary syphilis could be positively determined in only 40 instances. In those cases of inherited specific keratitis in which the cornea has been left with dense

opacities, Jackson<sup>1000</sup> is of the opinion that "specific remedies have either not been employed at all, or only to an extent altogether inadequate to influence favorably the course of the disease." Gifford<sup>347</sup><sub>Aug.</sub> has observed recurrent ulceration of the cornea in a boy who was receiving large doses of bromide of potassium for relief of epileptic convulsions. No other assignable cause for the corneal affection could be found.

Direct anæsthesia of the Gasserian ganglion, by means of a pledget of cotton saturated with chloroform introduced into the external auditory canal, has been tried with success by Gutierrez-Ponce.<sup>173</sup><sub>Feb.</sub> By this means he relieved an intense photophobia in a case of interstitial keratitis occurring in a boy 13 years of age.

A. D. Williams<sup>109</sup><sub>Jan.</sub> has successfully treated 2 cases of *traumatic keratitis*, after they had resisted other measures, by cauterizing the ulcer with pure carbolic acid. Ledbetter<sup>139</sup><sub>July</sub> gives an excellent *résumé* of the treatment of corneal ulcers, deeming it advisable in all cases that not only careful and proper local treatment should be made, but that a knowledge of the circumstances surrounding the physical condition should be obtained and taken into account. In *ulceration of the cornea with hypopyon*, Bettremieux<sup>173</sup><sub>May</sub> recommends iridectomy in preference to Saemisch's operation, claiming that with this method he not only obtains more perfect evacuation of the anterior chamber, but also, at the same time, forms an artificial pupil,—an operation which, in most cases, would have to be done subsequently. In *perforating ulcer of the cornea*, Lambert<sup>186</sup><sub>May</sub> urges the necessity of an early performance of paracentesis of the cornea directly into the ulcer, thus hoping to control the size of the ulcerous area. Festal<sup>188</sup><sub>June 8, 16</sub> commends the use of the *thermo-cautery* not only in certain corneal affections, but also in phlyctenular kerato-conjunctivitis, conjunctival granulations, pterygium, hernias of the iris, and certain forms of entropion and ectropion. Huntley<sup>239</sup><sub>June</sub> gives an account of the value "of the knife and actual cautery in ulcers of the cornea." As the result of clinical investigations upon *abscess of the cornea*, Hansell<sup>9</sup><sub>Mar. 8</sub> has found that *eserine* is superior to atropine; that cocaine is a symptomatic remedy only, and, when long continued, is injurious; and that the Saemisch operation is, in most cases, inferior to a simple division of the abscess.



In *abscess and deep corneal ulcers*, de Schweinitz<sup>9</sup><sub>Mar. 29</sub> also commends the employment of *eserine*. He finds that it acts more favorably than atropine "in patients of generally feeble powers, especially if past middle life, and if the lesion is situated in the periphery of the cornea." In the treatment of ulceration of the cornea without iritis, White<sup>1073</sup> employs an ointment composed of eserine, pilocarpine, cocaine, and iodoform. Should iritis be present atropine is substituted for the eserine. Where the corneal ulcer is deep Cheatham<sup>202</sup><sub>Feb. 10</sub> advises the use of eserine. Bourgeois<sup>577</sup><sub>Apr.</sub> claims especial advantage for antiseptic methods in the treatment of the graver forms of corneal inflammations, which, he asserts, are due, for the most part, to bacteria. He insists upon complete disinfection of the lachrymal duct and sac and of the nasal cavities when there is any indication of infection from diseased conditions of these parts. In beginning the treatment of every case he practices at least one lavage of the *cul-de-sacs* of the conjunctiva; and if there is also present disease of the lachrymal ducts or of the nose he continues this cleansing daily during the treatment of the case. When abscess or ulcer of the cornea, without hypopyon, exists, he employs cauterization with the thermo- or galvano-cautery or with a 2-per-cent. solution of nitrate of silver, followed by iodoform and antiseptic dressing. When hypopyon has ensued he practices paracentesis, followed by washing of the anterior chamber with Panas's solution of biniodide of mercury.

Thomalla<sup>190</sup><sub>Dec., '89</sub> continues his article on the *staining of the diseased cornea with fluorescein* and the utilization of this staining in diagnosis. His chief conclusions are as follow: 1. Recent corneal lesions can readily be distinguished from old ones by the fact that the latter do not take the stain. 2. Infiltration of the cornea does, while hypopyon does not, take the stain. An estimate of the extent of all recent lesions of the cornea, with defect of the epithelium, can thus readily be made. The presence of a foreign body lodged in front of a dark iris is readily revealed by the red zone of fluorescein which is formed around it. Randolph<sup>764</sup><sub>Apr.</sub> corroborates the statements of Thomalla as to the value of fluorescein as a means of diagnosing lesions of the cornea. Borel<sup>197</sup><sub>Dec. 20, '89</sub> reports the removal of a dermoid cyst of the cornea, which occupied almost the centre of that membrane and had no communication with the conjunctiva, thus differing from similar

growths heretofore described, which have had their seat at the sclero-corneal margin.

In reporting a case of *epithelioma of the cornea* in a man of 42 years, cured after a third operation, Galezowski<sup>173</sup><sub>Jan.</sub> recommends the use of the galvano-cautery, after ablation with the knife, as being more certain to prevent return. Lagrange<sup>188</sup><sub>Mar.2</sub> reports a case of epithelioma involving the cornea, which, he thinks, after a careful microscopic study of the specimen, must have begun in the conjunctival epithelium, because he can find areas of intact corneal epithelium, below which the corneal substance is infiltrated and destroyed by the neoplasm. A case of enucleation for recurrent epithelioma of the cornea is reported by Webster<sup>317</sup><sub>May</sub>. In order to prevent the possibility of a recurrence of the growth in the orbit by the irritation which might be produced by an artificial eye, it was deemed advisable to seal up the cavity of the orbit, which was accomplished by scalping the tarsal borders from the outer canthus to the lachrymal puncta. A melanosarcoma of the corneal limbus in a man 62 years old has been observed by Bock<sup>190</sup><sub>Jan.</sub>. The tumor had reached a considerable size without extending to the interior of the globe. Exenteration was practiced in July, 1889, and up to the date of reporting no recurrence or metastasis had taken place.

On account of intense pain, sympathetic irritation, and suspicious appearance of a rough tumor of a dirty, pearly color, which occupied the sclero-corneal margin of an eye of a 54-year-old man, F. T. Smith<sup>347</sup><sub>May</sub> performed enucleation of the affected globe, producing entire relief of the inflammatory and irritative symptoms. Examination of the tumor-mass, made by Alt<sup>347</sup><sub>May</sub> showed that it consisted of a staphyloma, which was lined by the choroid, ciliary body, and peripheral portions of the iris. The cavity thus formed contained the retina and some remnants of the vitreous body. The outer covering of the growth consisted almost totally of epithelial cells within a very loose net-work of connective tissue. Numerous "pearl nodules" were also present.

In the study of a case of so-called *complex staphyloma of the cornea*, Valude<sup>271</sup><sub>Mar., Apr.</sub> states that he has been able to demonstrate the fact that there existed no limiting basal membrane between the epithelium and the proper tissue of the cornea, and that the filaments which formed the bases of the surface epithelial cells were

directly continuous with the fine fibres which formed the true substance of the cornea. This observation, he thinks, gives support to the often expressed theory that the cells of the two great systems, the epithelial, on the one hand, and the connective tissue, on the other, are derived from a common cellular element, which is capable of differentiation into cells of either system, according to the requirements and conditions of development. Fage<sup>118</sup><sub>Aug. 31</sub> reports the enucleation of an eye of a boy of 13 years, who in infancy had had purulent conjunctivitis, followed by perforation of the cornea. As consecutive lesions, were found a total adherent leucoma and intercalary staphyloma situated between the rectus inferior and the rectus externus. No trace of the lens could be seen.

Stölting<sup>204</sup><sub>Dec. 28</sub> considers *scierotomy* superior to iridectomy in combating *buphthalmia* in children. In 2 cases thus treated he obtained apparently permanent cure with relatively good resulting vision, restoration of normal intra-ocular tension, and decrease of the corneal diameter.

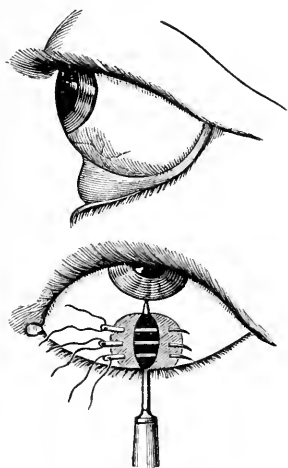
Grandclément<sup>211</sup><sub>Mar. 2</sub> speaks highly of *tattooing*, not only as a cosmetic operation for *corneal opacities*, but also as a *curative measure in conical cornea*. He reports a successful case in a man 75 years old, one of whose corneæ was almost completely opaque and, at its lower part, presented a fold looking like a "double chin." Vision was abolished. After five *séances* the cornea had regained its form below and its transparency above, so that a large iridectomy became possible and fair vision was regained. Gayet<sup>211</sup><sub>Mar. 2</sub> thinks that the happy result attained in Grandclément's case was due rather to the scarifications practiced than to the tattooing, properly so considered.

Pooley<sup>347</sup><sub>Mar.</sub> reports a case of *episcleritis* in a woman 39 years of age. Severe and continuous supra-orbital and temporal pains were complained of, being rendered worse by the instillation of atropine and applications of hot water. With the continuance of the hot water and the internal administration of pilocarpine, complete cessation of the pain occurred in twenty-four hours; with the additional use of yellow oxide of mercury, cure was effected in a few weeks' time.

W. F. Smith<sup>249</sup><sub>Apr., July</sub> has performed *corneal transplantation* from the rabbit's to the human eye five times, with partial success in 1 case. In this case a dense leucoma occupied almost the entire

cornea, leaving a partially transparent margin 1 millimetre wide, just within the sclero-corneal margin; there was no visible anterior chamber, the iris apparently being firmly united to the posterior surface of the leucoma. The operation was performed with a trephine devised by the author. Upon removing the corneal facet, the mortise thus made was found to be opaque, except in a spot not larger than "half the area of a pin's head." Sixteen months after the operation the transplanted disk of corneal tissue was still clear, but the membrane upon which it had grown was not more transparent than previously. The author believes that this result "only shows that in a case of central leucoma, the cicatricial tissue of which does

not include the membrane of Descemet, and when an anterior chamber still exists, a transplantation may be successful, and the transparency of the transplanted section may be maintained. But in just such a case an iridectomy would be a far preferable operation."



GALEZOWSKI'S OPERATION FOR  
STAPHYLOMA.  
(Recueil d'Ophthalmologie.)

Galezowski<sup>173</sup><sub>May</sub> proposes *excision and suture for staphyloma of the sclerotic* following circumscribed cyclitis, and reports a successful case. He thinks an analogous procedure could be adopted in certain forms of sclero-corneal staphyloma, with or without detachment of the retina. The accompanying figures show the method of operation.

*Diseases of the Iris and Ciliary Body.*—Blessig<sup>353</sup><sub>May</sub> speaks of a case in which he removed from the *iris* a *foreign body* that had remained imbedded in that organ for fourteen years, causing repeated inflammatory attacks. A very similar case is reported by Sessel.<sup>353</sup><sub>July</sub> A steel splinter remained imbedded in the iris for twelve years before causing irritation. It was then successfully removed. Helfrich<sup>776</sup><sub>Jan.</sub> removed a cilium from the anterior surface of the iris, it having been carried there by a pin which had penetrated the cornea and lens. Severe iritis followed the operation and the lens became cataractous. Rieke<sup>353</sup><sub>Sept.</sub> speaks of a case in which a stone splinter remained in the iris for thirty-one or thirty-two years without causing any inflammatory reaction.

Damsch<sup>75</sup><sub>May 1</sub> calls attention to the contrast which exists between *hippus* caused by nervous affections and that connected with the ordinary pupillary reflexes. He finds that while in the former the tendon reflexes are generally exaggerated, they are lessened or absent in the latter.

A case of *coloboma of the iris and choroid* of the right eye only is recorded by Grossmann.<sup>187</sup><sub>July</sub> The cleft included the optic disk and extended forward beyond the limit of ophthalmoscopic observation. The patient had also a congenital malformation of the right ear, which was curled forward and was much smaller than its fellow. Risley and Randall<sup>59</sup><sub>Aug. 9</sub> report a case of cyst of the iris, following a penetrating wound of the cornea in the left eye of a boy 10 years of age. Immediately after the accident it was found that the iris was prolapsed. The protruding membrane was snipped off, and in the healing of the wound a slightly cystoid cicatrix resulted. Five weeks later the fellow-eye became weak and vision rapidly fell. The ophthalmoscope showed the existence of a distinct neuro-retinitis. Under appropriate treatment this condition ceased. Seven years later he returned on account of a cyst of the lower part of the left iris, which rapidly increased in size and was accompanied by diminution of intra-ocular tension with total loss of sight. Sarcoma being suspected, and as vision in the right eye was diminishing, enucleation was advised and performed. Examination, which, however, is not yet complete, has failed to show sarcoma.

A case of *syphilitic iritis*, in which the suppurating, gummatous mass pressed against the cornea, has been seen by Minor.<sup>43</sup><sub>June</sub> Laqueur<sup>78</sup><sub>Aug.</sub> reports a case of double irido-cyclitis, manifesting itself seven days after the beginning of an attack of influenza, in a woman 53 years old. He believes the disease to have been excited by emboli.

Culbertson<sup>347</sup><sub>Jan.</sub> gives brief notes of a case of *plastic iritis*, with subsequent closed pupil, *following cataract extraction*, which was removed by combined use of incisions of mercury and division of the iritic adhesions and remains of the capsule.

Terson<sup>173</sup><sub>Dec., '89</sub> reports the successful removal by *iridectomy* of a *tubercular tumor* of the iris in a girl 12 years old, permanent after seven months, with an improvement in vision from  $\frac{1}{10}$  to  $\frac{1}{2}$ . A somewhat similar case is reported by de Wecker.<sup>173</sup><sub>May</sub> His patient

was a boy 8 years old. After an attack simulating an irido-choroiditis, a pea-sized tumor suddenly appeared upon the outer aspect of the iris, apparently circumscribed in extent. After iridectomy it was found that the neoplasm was prolonged backward toward the ciliary body. This remaining mass for a time grew rapidly toward the cornea, but the condition of the eye began to improve, and with this the growth became more transparent and finally was transformed into a dense cicatrix, a vision of  $\frac{1}{2}$  resulting. The same author<sup>173</sup><sub>May</sub> reports another case of spontaneous cure of "tubercle of the iris" under the administration of arsenic and iodoform and a milk diet. In such cases Galezowski<sup>173</sup><sub>May</sub> prefers constitutional treatment, with repeated paracentesis of the anterior chamber. A case of sarcoma of the iris in a child 2 years of age is reported by Alt.<sup>347</sup><sub>Feb.</sub> When first seen, examination of the eye showed a swollen, nodulated iris, bound down to a cataractous lens, the anterior portion of the membrane having a gelatinous appearance. Intra-ocular tension was normal. Enucleation was performed. Microscopically, the growth proved to be an example of the round-cell variety of sarcoma, which evidently had its origin in the loose parenchymatous tissue of the iris.

Limbourg<sup>254</sup><sub>Apr.</sub> reports a case of *leucosarcoma of the iris* in a child of  $7\frac{1}{2}$  years, interesting on account of its being complicated with iritis serosa. A case of tubercle of the right iris, in an infant of 7 months, is reported by Griffith.<sup>6</sup><sub>Dec. 21, '99</sub> The child had been subject to attacks of bronchitis and diarrhœa, and the cervical glands of the right side were enlarged. The eye, which had been affected for one month, showed "a yellowish nodule growing from the periphery of the iris" and numerous "millet-seed bodies from its surface; the pupil was closed, but there was no acute inflammation." The eye was enucleated after three weeks of ineffectual treatment. The disease was found to be confined to the iris and ciliary body. Microscopically, the growth exhibited the histological character of tubercle, but no bacilli could be detected.

Dujardin<sup>220</sup><sub>June 13</sub> describes what he terms a simplified method of "*irido-ectomy*" for the formation of an artificial pupil after occlusion following cataract extraction. The cornea is transfixated with a von Graefe cataract-knife a little below its transverse diameter, 2 millimetres within the corneal limbus, and by gentle movements of the knife two vertical parallel incisions, 4 to 5 millimetres in

length, are made. Through one of these incisions the operator introduces an iris-forceps, with which he seizes at the pupillary border as large a fold of iris as possible. The scissors are next introduced through the opposite opening, and by one cut an excision of the fold is made, leaving a central pupil, which remains patulous. He recommends this operation as being free from the danger of losing part of the vitreous, and as requiring less technical skill than the more difficult methods of de Wecker and Abadie. Fischer,<sup>69</sup><sub>Jan. 16</sub> of Dortmund, gives a tabular synopsis of 25 cases of corneal opacities, 20 of zonular cataract, and 3 of posterior polar cataract, in all of which Schoeler performed præcorneal iridotomy, with good results in all save 2 cases; especially encouraging was the improvement of vision after the operation in cases of zonular cataract. To facilitate separation of the edges of the iris, he recommends stroking the cornea with a spatula held vertically to the incision.

An instance of *voluntary control of the ciliary muscles* has been seen by Norton.<sup>776</sup><sub>July</sub> The patient was enabled at will to render herself myopic to a degree which was neutralized by a  $-\frac{1}{10}$ , this condition being maintained for half an hour at a time without fatigue.

Rijnberk, corresponding editor in Amsterdam, Holland, gives us the following account of Straub's contribution<sup>780</sup><sub>Dec. 28, '89</sub> to the *pathology of cyclitis*. This author, believing that the ciliary body acts also as the secreting structure for the aqueous and vitreous humors, asserts that in acute purulent cyclitis he has found in the vascular layer of this body a dense infiltration of leucocytes; and remarks that "it is curious that these cells do not first enter the tissue-fissures of the ciliary body or of the choroid, but take the apparently more difficult route through the lamina vitrea and the ciliary epithelium to the vitreous body. A smaller portion of the cells enter the fissures between the bundles of the ciliary muscle and reach the corner of the foremost chamber of the eye." In the chronic form his experiments confirm the descriptions of Raab and Herzog Carl. "The so-called cyclitic membrane consists of the shriveled-up membranes of the vitreous humor, in which many leucocytes and numbers of new-formed vessels are found." The cause of the shriveling of the vitreous body the author ascribes to "the decreased secretion of lymph in the second stage of cyclitis,

which coincides with the beginning of the hypotonia. The foremost chamber of the eye is no longer sufficiently fed by the ciliary body," and consequently the aqueous humor is formed "at the expense of the vitreous, sucking, as it were, the vitreous body empty." The space formed by the consequent collapse of the vitreous and its separation from the retina is filled from the chorio-capillaris. The fold thus formed at the anterior border of the retina he regards as "the first step in the detachment which so often complicates chronic cyclitis." He has found in all eyes enucleated for this cause a decided widening of the perichoroidal lymphatic fissures, which he ascribes to the "contraction of the elastic choroid, which in a normal state supports the greater part of the intra-ocular pressure." He considers "this fact of great importance in connection with the explanation of the causes of sympathetic ophthalmia."

Brandenburg<sup>254</sup><sub>Aug.</sub> saw an intensely acute *inflammation of the whole uveal tract* in both eyes of an apparently perfectly healthy child of 6 years. The onset resembled that of acute glaucoma. Complete blindness was produced in thirty-six hours. Though the exudates had been re-absorbed in six weeks, it was not until fourteen months later that vision was found to be completely restored.

An eye containing a *melanosarcoma of the ciliary body and choroid* was removed by E. Smith.<sup>185</sup><sub>Dec., '89</sub> When examined one year later there was no indication of the return of the growth. Lange<sup>204</sup><sub>Oct. '28</sub> completes the study of his case of tumor of the ciliary body (myosarcoma), with rupture of the capsule of the lens and traumatic cataract, previously reported in part in 1888. He believes that it is only the third case noticed in which cataract co-existed at so early a stage with a tumor of the ciliary body. He gives, as a group of symptoms valuable for an early diagnosis, unequal depth of the anterior chamber, irregular dilatability of the pupil, and dislocation of the opaque lens. Lagrange<sup>79</sup><sub>May 4</sub> gives an elaborate description of a myoma of the ciliary body, from a woman 34 years old, which he states to be the second case of pure myoma of this region as yet reported. It differs from the neoplasm of Ivanoff's case only in having the muscular fibres almost all disposed circularly, instead of longitudinally, as described by that author.

*Diseases of the Lens.*—Emmert<sup>214</sup><sub>Jan. 15</sub> describes a case of *congeni-*



*tal central capsular cataract*, in which there also existed the remains of a persistent pupillary membrane, with a shred of tissue connecting it with the capsule of the lens. Schirmer<sup>353</sup><sub>May</sub> notes a case of indirect injury to the anterior capsule of the lens, and discusses the theory of the mechanism of the traumatism. The appearances in his case lead him to attribute the capsular injury to direct transmission of the vulnerating force through the cornea and iris. Chilton<sup>85</sup><sub>Jan.</sub> states that 75 per cent. of the cases of *traumatic cataract* that he has met with in Texas have been due to injuries from thorns and sharp points of the "cotton-boll." Mohr<sup>84</sup><sub>June 14</sub> demonstrates a case of acquired and progressive "myopia lenticis," caused by a hyperplasia of the lenticular fibres, producing a globular form of that body. Fukala<sup>57</sup><sub>July 13</sub> contributes a striking example of *hereditary cataract*, which seems to show, according to this author, that this affection begins usually between 20 and 50. Bock<sup>190</sup><sub>Oct.</sub> has found calcareous granular bodies imbedded in the anterior surface of the iris, which, he thinks, had formed during the absorption of cataractous masses after the needle operation, they having been washed into the anterior chamber and there become attached to the iris. Similar bodies were seen on a secondary cataract of the same eye. For years no irritation of the iris existed.

A case of *spontaneous luxation of the lens* into the anterior chamber is reported by Dujardin<sup>220</sup><sub>Aug. 29</sub> in the person of a man aged 40 years. Acute glaucoma developed thirteen days later. He inclines to the theory of Manfredi, who believes spontaneous dislocation to be the result of a congenital anomaly of position of the lens. Fage<sup>184</sup><sub>Feb. 16</sub> reports 2 cases of spontaneous dislocation of the lens. The first was in a young man of 18 years of age, highly myopic, who had received a slight injury of the left eye two years before. The lens had suffered dislocation directly upward. No monocular diplopia was experienced, the vision in this eye being extremely low. The second patient was a man of 70 years of age, whose left eye had been operated upon for cataract twelve years before. The lens of the right eye was opaque and dislocated downward. The author insists upon the point that, although produced by different mechanism, the two accidents were due to a like cause,—a previous alteration of the zonule. The same author<sup>70</sup><sub>Apr. 20</sub> makes a later addition of 5 cases of this accident,—2 in

myopes, 1 in a case of over-ripe cataract, and 2 of traumatic origin,—in which the dislocated lens assumed a position external to the sclerotic and beneath the bulbar conjunctiva. Knapp<sup>249</sup><sub>Jan.</sub> gives the notes of 2 cases of dislocation of the lens into the vitreous humor, in which extraction was successfully accomplished by first making an upper corneal section and then expelling the lens by methodical external pressure in the ordinary manner, the speculum having been removed during the latter part of the procedure. C. S. Bull<sup>1</sup><sub>Sept. 6</sub> says that in the *extraction of dislocated lenses* it is possible “in many cases, perhaps in the majority, to extract the lens by external pressure, and to confine the use of instruments to assist in the removal of the lens after it has presented in the wound, or, at least, in the field of the pupil.”

In supplement to his study of the pathological anatomy and *pathogenesis of zonular cataract*, Schirmer<sup>204</sup><sub>May 23</sub> states that he has found vacuoles existing in a fresh lens, and that, consequently, they could not be caused by the hardening fluid, as Beselin thinks. Moreover, he says that the band of vacuoles corresponded in extent with the size of the cataract as determined during life. The veil-like, opaque zone around the cataract was found to be formed by a thick studding of vacuoles of moderate size. The author believes this to be also an expression of the same cause continuing to act with reduced intensity. H. Derby<sup>76</sup><sub>Sept.</sub> records 8 cases of double zonular cataract occurring in a family consisting of ten members. There was no history of convulsions in any instance. The majority of the patients were female. Green<sup>76</sup><sub>Sept.</sub> adds a note of a series of such cataracts occurring in females, all descendants of one great-grandmother. Against the criticisms of Magnus,<sup>201</sup><sub>B. 35, 11, 3</sub> Schoen<sup>204</sup><sub>May</sub> defends his theory of senile cataract, re-asserting that equatorial cataract is the primary change, and not nuclear sclerosis and shrinkage.

Schweigger<sup>69</sup><sub>July 10</sub> asserts that in old age the physiological *senile changes in the lens* cause *accommodation* to be lost, believing, in consequence, that toward the close of the sixth decennium every cataract can be extracted as soon as the visual disturbance makes the operation desirable; while in patients under 55 the surgeon must wait for ripening or must artificially ripen the cataract. Kalish<sup>59</sup><sub>Mar. 29</sub> reports 6 cases of *arrest and partial resorption of immature cataract*, with restoration of reading-power. This result was

obtained by the instillation of 2 drops of equal parts of glycerin and 1-per-cent. solution of boric acid in rose-water, followed by manipulation through the closed lids by resting the tip of each middle, ring, and index finger upon the nasal side of the eyeball, and, with slight pressure upon the globe, drawing them outward over the eye to the temporal side. This procedure is to be repeated twenty to thirty times a minute, the stroking being in one direction only and continued for ten minutes, when a second and third instillation is made, each followed by ten minutes' manipulation. His conclusions are: 1. Cases of immature uncomplicated cataract can be permanently benefited by this method. 2. The reading-power can be restored. 3. The treatment must be applied daily, Sundays excepted, for two or three-months, and at first notice of lack of benefit or diminution of sight treatment must be stopped. 4. The treatment must be under the supervision of an oculist." Barr<sup>1</sup><sub>Aug. 30</sub> has reported a successful extraction of immature cataract, resulting vision being "excellent."

In 10 cases of *senile cataract*, Snell<sup>6</sup><sub>June 3</sub> has employed Förster's method of hastening *maturation*. He says that the stroking of the capsule should be confined to the central portion as much as possible, and should be effected with gentleness. He believes that increased opacity showed itself frequently as early as a "few days" after the operation. Extraction of a cataract, he states, can generally be proceeded with in a month or six weeks after the artificial ripening. No iritis or ocular irritation occurred in any of his cases. In the primary iridectomy he makes a small downward coloboma, and in the extraction he employs a shallow lower flap. In a discussion following the above paper, Critchett said that he thought "that immature cataracts could be removed almost as well as when matured." He was convinced that "it was wiser to wait until the patient could no longer see to find his way about before operating." Tweedy stated that he operated upon unripe cataracts when the necessity arose, and attributed the satisfactory results he had obtained to the *modus operandi* employed, which consisted essentially in opening the lens-capsule at its extreme upper periphery after performing an iridectomy." He had found that "this procedure left the face of the anterior capsule untouched, and any lens matter that remained behind, or which formed subsequently, was inclosed in the capsule in its proper position, and did not come into contact

with the iris." MacKinley had performed the operation of trituration in 12 cases, and had obtained satisfactory results in all. Eales, who had operated on 36 cases, claims that in no instance was there failure to obtain maturation. Hill Griffith had done the operation in 28 cases, but always by direct trituration by means of a silver spoon introduced through an iridectomy wound. In 13 cases no results were obtained, and in 1 instance partial dislocation of the lens took place. Brailey thought that many of the cases operated upon when immature would probably not have advanced if left alone, and says that, as the eye is subjected to great risk by the operation, the surgeon should proceed cautiously in its employment.

An important contribution is made by Trousseau<sup>173</sup><sub>Mar.</sub> to the question of operating for cataract in the presence of grave general diseases. He gives statistics of 150 cases in which he operated with excellent results. He thinks that thorough asepsis is the secret of success. His list comprises 70 cases of diabetes (5 to 50 grammes—75 to 150 grains—sugar daily): 21 of Bright's disease, 6 of tuberculosis, 11 of chronic bronchitis and emphysema, 13 of arterio-sclerosis, 4 of cancerous disease; whilst hemiplegia, tabes dorsalis, alcoholism, mania, and circular insanity are also noted. Among the diabetics, hernia of the iris occurred only twice (once because of the restlessness of the patient), secondary cataract twice, and iritis three times; in 56 the anterior chamber was reformed by the third to fifth day, and in the remainder, with one exception, there was a further delay of only two to four days. The final visual results were equally gratifying in all the cases except 2, which were found to be the subjects of advanced diabetic retinitis, the condition not having been discovered before operation because of double cataract. Equally good results were obtained in the other categories. He gives the following conclusions: 1. If the disease gives a probable lease of life of several years, operation should be resorted to. 2. If the time is less than this (eighteen months to two years), operate only after repeated solicitation, knowing that the last months of life can be rendered more comfortable. 3. If the time is reduced to a few months, the possibility of restoring sight should not be suggested.

To rectify some mistaken ideas regarding *Daviel's method of cataract extraction*, Hirschberg<sup>190</sup><sub>July</sub> copies parts of Daviel's dissertation published in 1757. Grandélément<sup>211</sup><sub>July 20</sub> considers the elements

of success after cataract extraction to consist, first, in the prevention of suppurative accidents by perfect antisepsis in the field of operation, and, secondly, in operating in such a manner as to secure the best optical results. To secure the latter condition he thinks that it is necessary to realize in the operation the two following objects: 1. Expulsion of the whole lens, and even the anterior capsule, if that be possible. 2. The avoidance of adherence of the iris in the wound. The first object is best gained by a large keratotomy, capable of allowing the lens to be delivered in a single piece, after making a free opening in the anterior capsular membrane. Minute particles of lens or capsule must be removed by methodical stroking and by the use of intra-ocular injections. This last procedure is so satisfactory in his hands that he does not hesitate to operate in this manner upon unripe cataracts. Bono<sup>78</sup><sub>Aug.31</sub> gives statistics of 1250 cataract extractions. He advises against operation on unripe cataracts because of the increased danger of development of secondary opacities. This latter accident, he asserts, is decidedly favored by the presence of a choroiditis complicating the original cataract.

Chandler<sup>99</sup><sub>Oct.6</sub> gives a report of 50 cases of cataract operated upon by a new method. The innovation consists in seizing the iris close to its periphery, and, after gently drawing it out of the corneal wound, cutting it as close to the gripping instrument as possible, thus leaving "a small, round opening not more than 1 or 2 millimetres in diameter." The object of this aperture is to allow the free escape of the aqueous humor, which collects behind the iris and tends to cause prolapse of that tissue. Pipino<sup>9</sup><sub>May 24</sub> considers simple extraction the ideal operation for cataract. On the second day he invariably removes the dressing, which consists of a strip of isin-glass plaster. Bandera<sup>179</sup><sub>Dec.1,'89</sub> commends Galezowski's method of cataract extraction, which he believes to be the best when the pupil is moderately dilated, the anterior chamber deep, and the capsule of the lens weak and thin. Neve<sup>6</sup><sub>Oct.25</sub> gives the analysis of 100 consecutive cases of cataract extraction, 93 of these proving successful. Interesting data as to the varieties, conditions, and methods of operation and treatment are given. As a result of the third series of 100 cataract extractions, Knapp<sup>249</sup><sub>Apr., July</sub> adheres to the conclusion previously formed that "simple extraction is not only the best, but also the safest method of removing cataract."

Cotter<sup>647</sup><sub>June</sub> condemns *extraction without iridectomy*, believing that, owing to the extent of the circumcorneal incision, the danger of non-union and suppuration is increased, while the liability of loss of vitreous is greater. Lewis<sup>776</sup><sub>Apr.</sub> advocates extraction without iridectomy. The advantages claimed are: absence of any disfigurement; absence of pain; cleanliness of the wound and, consequently, more rapid healing; and, finally, better visual results. For the prevention of future operations for secondary cataract, he performs immediate division of the posterior capsule with the cystotome, after extraction of the lens. As part of the after-treatment, he advises the application to the lids of a dressing consisting of a small piece of linen or cotton cloth, lightly spread with vaseline, covered by antiseptic absorbent cotton, filling the orbits, the whole dressing being held in place by a broad adhesive strap, carried from temple to temple, and another from the brow to the cheek; the latter alone when but one eye is to be protected. He believes that the operation is more difficult, that prolapse of the iris may occur, and that single extraction is not always possible. Tyner<sup>1</sup><sub>Sept. 20</sub> performs *preliminary capsulotomy*. Having previously dilated the pupil with a weak solution of atropine, a Bowman stop-needle is passed into the anterior chamber and the capsule is lacerated in its upper quadrant, the line of incision corresponding to the upper pupillary curve of the iris. The needle is withdrawn, care being taken that no aqueous is lost. The corneal section is made with a rather broad Graefe knife, and, being completed, pressure with the flat of the blade causes the corneal opening to gape, when, at the same moment, counter-pressure with the fixing-forceps below aids in the expulsion of the lens. The author states that the lens almost always shows a tendency to follow the knife as the corneal incision is progressing, and when the cut is finished the lens is partly in the anterior chamber. He has performed the operation in 12 cases, with good results except in 2 instances. Swanzy<sup>2</sup><sub>Mar. 8</sub> states that he searches the corneal wound for transparent capsular matter by passing the points of a curved iris-forceps, slightly opened, between the lips of the wound, and then closing and carefully withdrawing them. This procedure is repeated along the whole course of the wound. Tyree<sup>102</sup><sub>Nov.</sub> reports 11 operations for cataract. He performs preliminary iridectomy to prevent iris prolapse. In considering the

advisability of performing an iridectomy in traumatic cataract, Owens<sup>267</sup><sub>May</sub> states that, as a rule, it should be performed as early as possible, and, the eye having become quiet, extraction may then be done at leisure, except in very young children, where it may be left to absorb. He says that, "if there should be a foreign body in the lens, the best mode of extraction is undoubtedly by the scoop, passing it well behind the extracted lens and foreign body together." If there is no foreign body he is in favor of extracting by Teale's suction-curette, care being taken to have the lens sufficiently fluid for removal, this result being obtained by preliminary needling of any doubtful portion. In performing the latter operation the author uses a medium-sized keratome or bent needle. By puncturing the cornea through the cicatrix of the iridectomy wound and passing the point of the instrument in front, just at the edge of the lens, he continues the incision into the substance of the lens to its centre. Eserine is instilled both before and after the iridectomy and the extraction.

Rolland<sup>173</sup><sub>Feb., Mar.</sub> has carefully studied the *action of various antiseptics* as used especially *in the operation for cataract*. Discarding the modern chemical antiseptics as dangerous or ineffectual (boric acid), he recommends douching of the conjunctival sac with a somewhat forcible stream of sterilized water at 40° C. (104° F.), as the most reliable means of sweeping away bacteria. In accord with the experiments of Chamberland, Cadéac, and Meunier, he has found many essential oils to possess strong germicidal powers. For instruments he recommends scrubbing with cinnamon-soap, immersing in sterilized water and then in absolute alcohol. For asepticizing the hands, after thorough cleansing, he uses glycerin containing several drops each of various essential oils, followed by lavage with sterilized water. As an irrigant he uses a solution of sterilized water, alcohol, and several essential oils.

Chisolm<sup>78</sup><sub>Aug.</sub> again describes his *method of treating the eye after cataract extraction*, which consists only in the use of an adhesive strip to maintain the gentle closure of the lids over the eye. The sound eye is left uncovered and the patient kept in a room from which light is not excluded. Fuchs<sup>78</sup><sub>Aug.</sub> also does not use a bandage, but effects closure of the lids by a compress of cotton held in place by an adhesive strip.

For the purposes of support to the lips of the wound in a

cataract dressing, protection from accidental violence, and as complete rest to the eye as possible, Gifford<sup>249</sup><sub>Jan.</sub> has devised the following *dressing*: A concave shield of stiff pasteboard of such size that the flaring edges rest on the bridge of the nose, the forehead, the temple, and the cheek, while the arched centre remains an inch or more from the surface of the lids. This is held in position by an elastic band which is re-inforced by a firm roller bandage. The fellow-eye is closed with a separate dressing, consisting of a thick wad of cotton, which is kept in place by a pasteboard shield secured simply by an elastic band. Previous to the application of this dressing, the lids of the eye which has been operated upon are closed by a simple plaster, or an arrangement of parchment or lint covered on one side by an antiseptic ointment, or by an ordinary moist dressing of cotton soaked in sublimate solution. He finds the shield of advantage in all cases of extensive wounds of the external tunics; for use in young children, when bandages are difficult to keep in place; and as a protection to the non-infected eye in monocular, gonorrhœal ophthalmia.

The etiology of *delirium following the operation for cataract* has been considered by Parinaud.<sup>173</sup><sub>May</sub> He attributes the condition in great part to the prolonged bandaging of the eyes, and does not consider it due to the employment of atropine, inasmuch as this drug was not used in any of his observed cases. Parinaud's opinion is corroborated by Valude<sup>173</sup><sub>June</sub> in the report of a case in which a delirium, lasting two days after an operation of simultaneous double iridectomy for subacute glaucoma, immediately disappeared upon the removal of the dressings. Grandclément,<sup>173</sup><sub>May</sub> however, believes that atropine is the causative factor in most cases of post-operative delirium, while Chibret<sup>173</sup><sub>May</sub> asserts that alcoholism often holds a causal relation. In several cases cited by Bourgeois<sup>577</sup><sub>July</sub> well-marked delusions of persecution have been observed. This author<sup>577</sup><sub>Aug.</sub> gives as predisposing causes alcoholism, hysteria, and senility. The operation itself he considers the exciting cause. Salvator Ledda<sup>173</sup><sub>July</sub> contributes to the discussion by reporting two instances which seem to be clearly dependent upon the use of atropine. In one of these cases, indeed, the delirium occurred before operation, developing three hours after instillation of a quantity of a collyrium of 1 per cent. of atropine, the exact amount used not being stated. He



concludes that the principal reasons for the condition were the mental character of the patient, the predisposition to mania, and the susceptibility to atropine.

Von Frankl-Hochwart<sup>390</sup><sub>B.9,p.152</sub> has collected the clinical history of 31 cases in which psychoses developed after operations on the eye. According to this author, the most important influence seemed to be the treatment by exclusion of light, which even produced disturbance of intellect, without operation, in 2 cases seen by Schmidt-Rimpler. He asserts that the mental symptoms develop much more frequently after eye operations than after those in general surgery.

Dufour<sup>173</sup><sub>May</sub> presents a careful study of the *operative aspect of secondary cataract*. His conclusions are quoted at length: 1. Operation upon a secondary cataract is only justified when there is absolute guaranty against unfavorable consequences. 2. In the present state of science the operation can be practiced without danger of infection. 3. Operation is only indicated when vision is below  $\frac{2}{5}$  and when there is a membrane in the pupillary space capable of explaining this diminution. 4. It is necessary to wait at least six or seven weeks after extraction before operation upon a secondary cataract. 5. This operation can be done with the stop-needle, if the membrane is simple; with the knife of von Graefe, if there are iritic adhesions; or with the pince-scissors of de Wecker in the case of "*cataracte secondaire modulaire*." 6. In the simple operation it is important that the needle should have rounded edges, so as not to drag fragments of the capsule out with it. Gauran<sup>3</sup><sub>Aug-10</sub> relates the case of a woman 26 years old, who, a year after marriage, was affected with melancholia (*lypémanie anxieuse*), with hysterical and other symptoms. She presented, besides, double cataract, for which operation was performed. After the extraction her mental trouble disappeared, and had not returned two years later, when the case was reported.

Steffan's assertion,<sup>353</sup><sub>v.27,p.406</sub> that *suppuration following cataract extractions* is principally due to imperfect technique in the operation, is vigorously combated by Adamük,<sup>353</sup><sub>Jan</sub> who, from a very rich operative experience, is convinced that infection is the sole cause of such suppuration. Two cases of infection occurring a long time after cataract extractions are reported by Fage.<sup>171</sup><sub>July, Aug</sub> In one case a destructive panophthalmitis appeared four months after

operation ; in the second case keratitis with hypopyon was manifested ten years after the extraction. Having excluded all other causes, the author decides that the route of infection in both instances was through the old corneal cicatrix, although this was flat and free from any adhesion of the iris.

Berry<sup>2</sup><sub>Mar. 22</sub> has had "*spontaneous purulent hyalitis*" follow the successful extraction of a cataract. The patient was a man 53 years of age. Nine months after the operation severe pain came on in the eye, and was followed by almost complete loss of sight. Examination showed acute purulent iritis with hypopyon ; tension plus, and vision reduced to counting fingers with difficulty. No improvement taking place, the eye was enucleated, and immediate examination of the globe revealed extensive purulent infiltration of the vitreous, with abundant hæmorrhages in the retina. The choroid was apparently healthy. The microscope showed that there had been accurate apposition of the lips of the corneal wound, and that the iris was nowhere adherent to the cicatrix, but that there was a "slight flat attachment to the cornea in front of it." The suppuration appeared to have commenced behind the margin of the cornea, where a few cocci were found scattered among the cells. The choroid and deeper layers of the retina appeared healthy. The author says that "the possibility of a violent septic hyalitis taking place spontaneously so long after an extraction was new to him, and that the case was all the more astonishing in that, not only with respect to the acuity of vision, but also from an operative point of view, it had been completely satisfactory." A case of *capsulitis purulenta et hæmorrhagica* occurring ten days after cataract extraction is recorded by Kirkpatrick.<sup>347</sup><sub>Apr.</sub> The inflammation developed coincidently with a severe rhinitis. There were no corneal or iritic complications, and no inflammation of the wound. In four weeks' time the eye had become quiet, but the pupillary area was occupied by a dense gray membrane, except at a small opening superiorly.

Boynton<sup>776</sup><sub>Jan.</sub> has had an *acute secondary glaucoma* follow cataract extraction in the right eye of a woman 58 years old. Within twenty-four hours after the operation, increased intra-ocular tension and pain came on in the unoperated eye, and upon the tenth day symptoms of acute glaucoma appeared in the right eye. Instillation of eserine gave almost immediate relief to the

symptoms, and the patient ultimately recovered with normal vision. Keyser<sup>61</sup><sub>Mar. 15</sub> has had glaucoma fulminans follow cataract extraction with iridectomy in 2 cases.

Woods has seen intra-ocular hæmorrhage following cataract extraction and iridectomy for glaucoma. In the treatment of such cases he thinks there are three important questions: 1. Is prophylaxis possible? 2. What is to be done with the hæmorrhagic eye? 3. What course of treatment should be followed for the removal of a cataract in the fellow-eye after such an accident?"

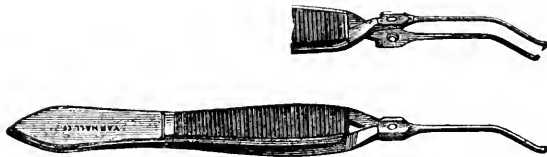
Valk<sup>1</sup><sub>Apr. 19</sub> makes a further report upon the *retractor*, in which he arrives at the following conclusions: That an introduction of this instrument into the anterior chamber can in no way endanger the success of the operation; that the slight pressure on the iris as it is 'tucked back' by the retractor does not injure that membrane nor tend to cause any subsequent iritis; that, in all cases of hard, senile cataract, it will greatly assist in the extraction of the lens and the return of the iris to its normal position; that, in soft cataracts, it can also be used to keep the iris out of the way as the soft masses are gently pressed out with the spoon; that, in cases of dislocated lens, it will assist extraction by passing the end between the lens and preventing it from sinking in the vitreous; that its use is perfectly safe, and that it may be readily withdrawn from the eye at once in case any necessity for it should arise; that it required much less pressure on the eyeball to produce the exit of the lens, thereby lessening the possibility of prolapse of the vitreous.

Burnett<sup>347</sup><sub>Dec., '89</sub> considers that *regular astigmatism, following cataract extraction*, is due to a failure of the wound to heal properly. He says that the healing occurs by the interposition of lymph, which undergoes a cicatricial contraction, and with this a diminution of the astigmatism, displaced by a concomitant increase in refraction in the vertical and decrease of refraction in the horizontal meridian, almost always, however, leaving the "vertical meridian still less refracting." Astigmatism following cataract extraction is, therefore, contrary to the rule. A practical point which the author wishes to make is "that the visual acuteness in cataract cases cannot be considered as definitely fixed within three months after the operation, the cicatrization in some cases not being completed before the end of that time." In conclusion,

the author says that "it has not yet been determined that one method of extraction has any advantage over another in lessening the tendency to change in the form of the cornea, for those cases where extraction is made without iridectomy are as frequently attended with astigmatism as when it is made with iridectomy."

Bourgeois<sup>67</sup><sub>Feb. 15</sub> advocates removal of as large a portion as possible of the anterior capsule previous to extraction,—an operation for which he proposes the name *kystectomy*. Besides the avoidance of secondary cataract and the preservation of a clear pupil, he considers among the advantages of this method its avoidance of hernia of the iris (from the permissible use of eserine) and its freedom from the danger of having a piece of capsule imprisoned in the corneal wound. A cut of his instrument, the kystectome, is here reproduced.

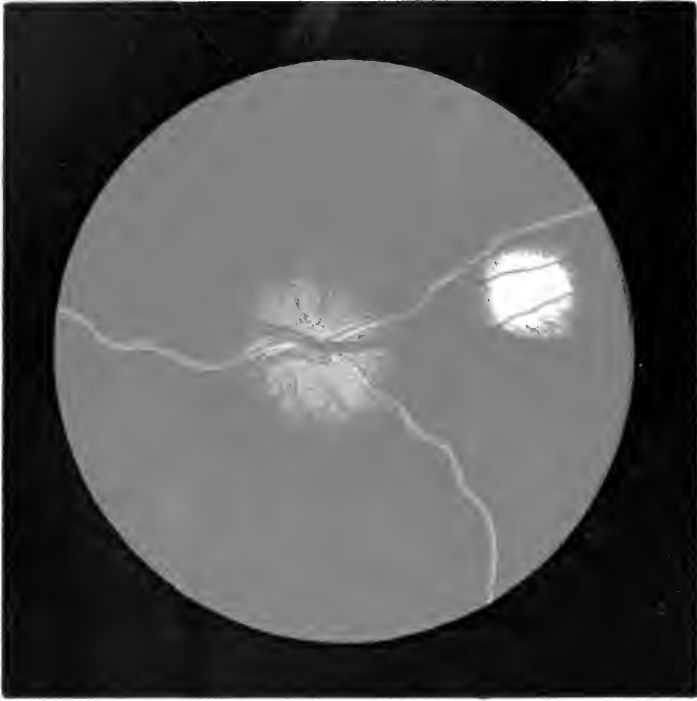
*Diseases of the Choroid.*—Guende<sup>173</sup><sub>June</sub> reports an extremely interesting case of *neoplasm of the choroid*, following apparently



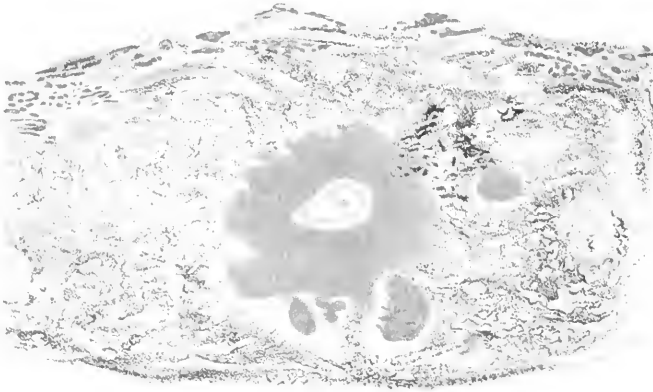
BOURGEOIS'S KYSTECTOME.  
(*Bulletin Général de Thérapeutique.*)

slight injury to the eye nine months previously. The patient was a woman 54 years old, who for nine years had suffered with malignant tumor of the breast. Numerous secondary osseous nodules were found upon the parietal and frontal bones, sternum, clavicles, and ribs, besides neoplastic involvement of the other breast, axillary and anterior cervical glands, liver, and pelvic organs. The question of relationship between the ocular tumor and the generalized new growth is of decided interest. According to Fuchs,<sup>1074</sup> in 259 collected cases of ocular melanosarcoma no instance of such tumor being a secondary growth has been recorded. In a report upon Guende's communication, Jocqs<sup>173</sup><sub>June</sub> inclines to the belief that the ocular tumor was simply a further manifestation of constitutional generalization, and that naturally from its soil it assumed a melanotic type. In the same connection, Meyer<sup>173</sup><sub>June</sub> mentions a case published by Gayet in which a choroidal sarcoma contained elements of tubular gland structure, which has no physiological





Ophthalmoscopic Picture of Tuberculosis of the Choroid (Carpenter).  
Illustrated Medical News



Microscopic Section of Tuberculosis of the Choroid (Carpenter).  
Illustrated Medical News

existence in the eye. A subsequent autopsy in this case revealed a cancer in the stomach. Guende's case is unfortunately incomplete because of the failure to obtain specimens for microscopic study.

Notes of a case of *recurrent choroido-retinitis* in an unmarried woman, 25 years of age, are given by Theobald.<sup>59</sup> The sight of the left eye having been destroyed by recurrent attacks of inflammation, and five months later the right eye becoming inflamed, the left globe was enucleated. Some improvement of vision resulted, but repeated relapses occurred. An iridectomy was attempted, but proved a failure (as it was found impossible to seize the iris) and the operation was converted into a sclerotomy. The result was unsatisfactory, and soon all light perception was lost. The author states that syphilis could almost certainly be excluded.

In the treatment of *central chorio-retinitis* and disseminated choroiditis, Darier<sup>171</sup><sub>Sept., Oct.</sub> commends the use of hypodermatic injections of bichloride of mercury as practiced by Abadie. In the choroidal lesions of myopes this plan is not so satisfactory, and he here employs daily for a month 1 centigramme ( $\frac{2}{13}$  grain) of the drug in pill form, omitting for a month, and so continuing according to the gravity of the case. In addition to this, he uses injections of pilocarpine every two days. Culbertson<sup>347</sup><sub>Jan.</sub> states that he has found mercury useful not only in the more active stages of chronic choroiditis and retinitis, but also of value in the latter periods of those diseases, having "frequently improved vision by guarded courses of mercurial inunctions, followed later by bichloride of mercury by the mouth and continued possibly one or two months."

Wood<sup>219</sup><sub>Oct.</sub> has seen *ossification of the choroid* in an atrophied globe resulting from ophthalmia neonatorum twenty-five years previously. He found that the bony shell had the exact situation and relations of the capillary layer of the choroid.

From an exhaustive study of 8 cases of *tuberculosis of the choroid*, George Carpenter<sup>645</sup><sub>Dec., '88</sub> states that tubercles of the choroid are protean in their characteristics, and one must be prepared to find them under several guises. In regard to the microscopical characters of these growths, he says that "although in some cases the blood-vessels are far less blocked with blood-clot, yet in others proliferation of the endothelium is seen in various stages," and he

“ would offer as a suggestion that the giant-cell is formed from the cohesion of these proliferated elements into a single cell-mass.” He says that “ the giant-cell in the choroidal tubercle is not, as has been seen, oval or circular in outline, to the exclusion of other forms, but more often than not it is distinctly elongated, and corresponds in outline to the various shapes assumed by the healthy choroidal vessels as seen under the microscope.” He believes, moreover, that “ in many instances it is found lying in the blood-vessel, or in a space in which a vascular wall-remnant can be traced. If, then, it is admitted that the giant-cell can be formed from the proliferation of vascular endothelium in a vessel of a certain calibre, there is no reason why the process should not go on equally well in vessels smaller still in connection with the main vessel, and so give rise to the processes of the giant-cell and the epithelial elements surrounding it.” He considers that the small-cell infiltration is “ in part formed by white corpuscles, and in part by proliferation of the connective-tissue cells of the choroid.” Plate 1 represents the ophthalmoscopic appearance in one of the cases, and plate 2 illustrates a microscopic section of the growth.

Hotz <sup>61</sup><sub>Feb. 22</sub> reports a case of recovery from *sympathetic ophthalmia* induced by a sarcoma of the choroid, five months after enucleation of the offending organ. A case of melanotic sarcoma of the choroid and ciliary body in a man 62 years of age is reported by Baue. <sup>1071</sup><sub>v. 20</sub> Examination of the right eye showed a staphylo-matous condition, with enlargement of the blood-vessels in the lower, outer quadrant of the globe. The pupil was irregularly dilated, and the iris, which was bulging, had become detached from its ciliary attachment for a distance of 4 millimetres in its lower, outer segment. The ophthalmoscope showed a dark, nodular mass occupying a position corresponding to the staphyloma. After enucleating the eye a piece of the optic nerve three-eighths of an inch long was excised. Examination with the microscope showed the growth to be a melanotic sarcoma of the spindle-celled variety. Seventeen months later there was no manifestation of a secondary development.

A case of metastatic carcinoma of the choroid in the right eye of a woman 46 years of age is reported by Wadsworth. <sup>99</sup><sub>Nov. 20</sub> Sixteen months previously the right breast had been removed for cancer. Ewing <sup>204</sup><sub>May 23</sub> reports a case of metastatic carcinoma of



FIG. 1.



FIG. 3.



FIG. 4.

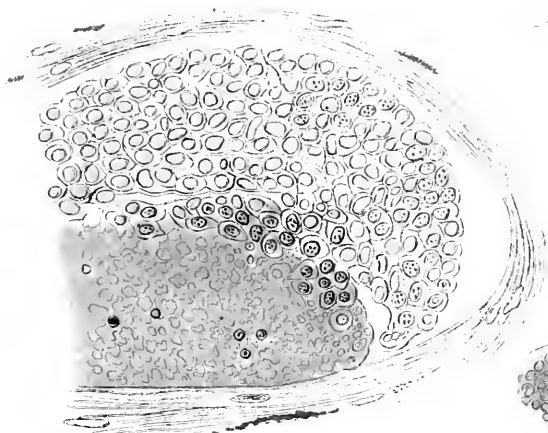


FIG. 5.

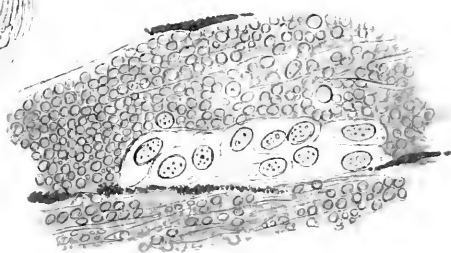


FIG. 2.



FIG. 6.



Metastatic Carcinoma of the Eyeball (Milvalsky).  
Archiv für Augenheilkunde



the choroid, ciliary body, and iris, secondary to a mammary cancer, in a woman 32 years old.

To the 6 cases of *metastatic carcinoma of the choroid* previously reported by other observers, Mitvalsky<sup>254</sup><sub>July</sub> adds 2 new cases of his own, one of which, secondary to a mammary cancer, is of great pathological interest. The accompanying chromo-lithograph gives a graphic picture of various parts of the ocular growth. Fig. 1 represents the macroscopic appearance of a section of the bulb. The tumor appears in the form of a flat, tabular swelling, occupying two-thirds of the choroid. The microscopical examination reveals as most peculiar features the following: 1. Necrosed foci, light yellow in color, appearing in strong contrast to the rest of the tissue, which takes staining well. (Figs. 2 to 5.) The larger foci contain choroidal pigment. (Fig. 2.) 2. Dark-stained solitary nuclei, placed mainly peripherally in the necrosed foci and surrounded by cancer-cells. (Figs. 4 to 6.) 3. Around the periphery of the tumor, where it blends into normal structures, immensely dilated blood-vessels and lymph-channels. 4. Large hæmorrhages (Fig. 3), which probably explain the origin of the necrotic foci. The absence of decaying epithelial cells and the want of pigment in the smaller foci seem to exclude these elements as a cause of the foci of degeneration. The author believes that the cancerous structure propagates itself along the trabeculæ (Figs. 3 and 5) of the choroidal connective tissue, which it surrounds, and thus forms isolated foci of different shapes; and that some of the innermost cancer-cells, from want of nutrition, undergo retrogressive change, appearing as the free dark-staining nuclei. The same considerations, he thinks, serve to explain the apparent co-existence of the two forms of cancer, the scirrhus and simple. (Fig. 2.) He attributes the rarity of metastasis to the eye-bulb to the peculiar course of the ophthalmic artery being unfavorable to propagation of the cancer-cells, and to the peculiar structure of the choroid, which, although rich in smooth, elastic channels, is bare of parenchyma, thus offering a soil that is unfavorable for cancerous growths.

*Diseases of the Vitreous.*—Successful removal of a piece of steel from the vitreous humor by an electro-magnet is recorded by Post.<sup>347</sup><sub>p.148</sub> The eye recovered with "perfect vision." Vossius<sup>4</sup><sub>Jan. 6</sub> has removed with good results a cysticercus from the vitreous body

by means of the meridional incision after severing the tendon of the inferior rectus. He gives a review of the method employed and the results obtained by different operators. Two more cases of the kind are reported, one operated upon successfully by Sattler<sup>84</sup><sub>Dec. 7, '89</sub> and the other by Magawly,<sup>21</sup><sub>Mar. 17</sub> the latter being interesting on account of the extremely rare occurrence of the parasite in Russia.

Wagenmann<sup>204</sup><sub>Dec., '89</sub> gives an exhaustive study of 18 cases of *purulent infiltration of the vitreous* occurring more or less closely *after iridectomies or cataract extractions*. His clinical observations, supplemented by microscopical examinations, seem to prove the correctness of Leber's view that such purulent inflammation is the result of new infecting foci forming in the scar-tissue and its immediate neighborhood. Moreover, by his experiments, he is brought to believe that the large number of cases arising from prolapse of the iris through wounds and ulcerative perforations, or from adherent leucomata, present the same general clinical picture and follow the same pathological course as the acute purulent inflammations which he has studied in detail.

Gallemaerts<sup>276</sup><sub>July 20</sub> makes a valuable contribution to our knowledge of *synchysis scintillans*, a subject which, he says, has received little attention since the study of Poncet, published in 1876. This last-named author found in an eye thus diseased crystals of cholesterine, tyrosine, and phosphatic globules, which he regarded as the product of a senile or fatty degeneration of the vitreous body. Thanks to more perfect methods, Gallemaerts has been able to demonstrate that tyrosine does not exist at all or only very exceptionally, and that the "phosphatic globules" are nothing else than pigmented cells from the ciliary region. He asserts that the presence of cholesterine is alone proven. He concludes that an inflammatory process somewhere in the uveal tract, either in the choroid or the ciliary processes, gives rise to an exudation into the anterior chamber and the "retro-retinal cavity," and in this medium the crystallization of cholesterine is determined. Unfortunately, he fails to give any satisfactory explanation for the production of cholesterine in this exudation. Haensell<sup>78</sup><sub>Aug.</sub> describes the alterations in the vitreous body observed in glaucoma, and says that it is especially the cases without excavation of the disk that are due to these changes in the structure of the vitreous and of

its nutritive canals. Hirschberg<sup>190</sup><sub>Sept.</sub> reviews the literature of *vascular new formations in a clear vitreous* springing from the retina or optic disk. He adds a case which he observed as a sequel to hæmorrhagic retinitis. Bull<sup>76</sup><sub>June</sub> reports 12 additional cases operated upon for fixed membranous opacities in the vitreous humor. In 11 of these there was notable betterment in vision, while in 1 instance no improvement followed the procedure. He says that whenever the peculiarities of the case admitted it, the point selected for the puncture was just in front of the equator of the eyeball and just below the border of the external rectus-muscle. The instrument used was either the keratonyxis-needle or a broad needle with a double cutting-edge, except where the membrane appeared tough and thick, when a very slender cataract-knife was used. In conclusion, he asserts that "the experience gained from the results in the entire number of 29 cases has led the writer to a favorable conclusion as regards the value of the operation," believing that the operation is, without doubt, a suitable one in certain cases, and is justified by the results obtained. He finds that, if the field of vision is intact and projection good, and if the membranes in the vitreous are neither too dense nor too numerous, the operation promises almost always a fair amount of improvement in the vision and sometimes very marked benefit. He properly cautions us that "no operation should be undertaken until all signs of intra-ocular inflammation have long subsided, and until, in fact, the membrane in the vitreous has become a chronic obstruction to vision, and, in reality, the eye should be absolutely free from all irritation before attempting any such surgical interference."

*Diseases of the Retina.*—In a lecture upon some forms of *retinal pigmentation*, Frost<sup>2</sup><sub>Dec. 14, '89</sub> takes exception to the term "retinitis pigmentosa," as being misleading, because: "first, the disease is much more of a degenerative than of an inflammatory type; secondly, pigmentation of the retina occurs in other conditions; and, thirdly, in many cases which must certainly be included under the title, retinal pigment is present in quite an insignificant quantity." The author does not think sufficient stress has been laid upon the fact that, as the disease progresses, the affected area becomes more extensive, but no proportionate increase takes place in the amount of pigment in the area of the fundus first inspected. His impres-

sion is that the pigmentation diminishes in the later stages of the disease. Two cases in support of his assertion are described.

In a criticism of this article, Berry<sup>2</sup><sub>Dec. 21, '89</sub> says that "up to a certain point, at all events, an increase does take place in the pigmentation of the area affected;" and that, "whether or not a disappearance of the pigment deposited in the retina ever does take place, it is certain that the rule is for the amount of pigmentation to increase instead of to diminish with the duration of the disease."

The notes of a case of *detachment of the retina*, the result of a gunshot wound of the eyeball, with a subsequent re-attachment of the membrane, is given by J. H. Thompson.<sup>249</sup><sub>Jan.</sub> Primary examination showed a shot wound at the outer inferior zone of the ciliary region, about three lines from the cornea, through which exuded a bead of vitreous. The presence of a blood-clot in the orbit, near the sclera, gave the appearance of the shot having passed through the eye. No view of the fundus could be obtained on account of hæmorrhages into the vitreous and anterior chamber. In three weeks' time detachment of the retina began and became complete. One year later the retina had returned to its normal position over the greater part of the field. There was no light perception, although, curiously, the eyes responded to light stimulus at the time. Nine months from the day of injury useful vision had been restored and tension had returned to normal. Final examination showed a slight posterior polar opacity and a stellar cicatrix in the retina at the site of injury. At the time of accident the other eye was badly damaged, necessitating its removal on account of panophthalmitis.

Schoeler<sup>4</sup><sub>Sept.</sub> refutes Schweigger's arguments against his operation, and brings forward valuable testimony regarding the efficiency of his method. He considers it desirable, however, that other substances than iodine should be sought for, which should possess the advantage of not producing too strong a reaction in the vitreous body, of exerting no injurious influence upon the posterior capsule of the lens, and of effecting a more decided and more diffuse reaction in the retina.

G. Harlan<sup>76</sup><sub>Sept.</sub> has seen *pulsation of the retinal arteries* result from the instillation of *homatropine* in the eye of a man 60 years of age. Oeller<sup>251</sup><sub>Aug.</sub> describes an interesting case of miliary aneurism of a macular artery. The visual field exhibited a central scotoma

with a peculiar peripheral limitation. Three cases of *obstructed retinal circulation* are reported by A. S. Morton,<sup>76</sup><sub>Mar.</sub> First case was a woman 22 years of age, who had been subject to repeated paroxysmal failure of sight in the right eye, accompanied by migraine. After loss of sight in this eye during an attack of right-sided supra-orbital pain, paroxysmal failure of vision began in the fellow-eye, commencing from above and continuing downward until vision was completely lost, and returning from below upward. There was no cardiac lesion and the urine was normal. Ophthalmoscopic examination of the right eye showed the usual appearance of obstructed retinal circulation. The author suggests that arterial constriction occurred in the retinal artery long enough for the formation of a permanent thrombus. The second case was seen in a man aged 44 years, suffering from Bright's disease, with hypertrophy of the left ventricle, aortic regurgitation, and probable atheroma of the aorta. There had been paroxysms of partial failure of vision in the affected eye before the sight was entirely lost. In the third case there was no history of previous failure of vision. The urine was not albuminous, and though the heart was slightly hypertrophied there was no valvular lesion. There was high arterial tension and probable atheromatous degeneration of the aorta. In the right eye the ophthalmoscopic examination revealed great œdema of the retina, with "cherry-spot" of the macula, to the nasal side of which there was a large hæmorrhage. The arteries on the disk were very small and the veins somewhat distended. The author attributes these changes to the vascular condition. In the case of *thrombosis of the central artery of the left retina* reported by Wadsworth,<sup>99</sup><sub>Aug., 14</sub> central vision was maintained, the macular region being supplied by an unusually large cilio-retinal vessel.

A peculiar affection of the neuro-retinal circulation, probably thrombotic, has been noted by Cheatham<sup>249</sup><sub>Jan.</sub> in a 15-year-old anæmic girl, who had never menstruated. The nerve and retina presented an appearance closely simulating embolism of the central artery of the retina. The retinal vessels, however, were plugged with dark blood-clots, which, at times, would be broken and washed away. The following day the currents, which appeared finely granular, filled more quickly. Twenty-four hours later an artery which was emptied became filled. On the fourth

day no current was discernible. In one month's time the nerve and retina were atrophied.

C. A. Wood <sup>249</sup><sub>Apr., July</sub> has seen an instance of *embolism of the superior nasal branch of the central retinal artery* of the left eye in a man 23 years of age. The ophthalmoscope showed fine vitreous opacities with haziness of the upper and inner quadrant of the retina. There was a well-defined yellowish spot obscuring the outline of the artery at half a disk's diameter up and in from the edge of the nerve-head. Between this position and the disk the artery looked as though it contained a blood-clot. There was hypertrophy of the left ventricle, while a loud systolic bruit, propagated upward, could be heard at mid-sternum. Arterial tension was moderately increased. At the time of examination vision in each eye equaled  $\frac{6}{6}$ , but the patient claimed that the day previous the sight of the left eye was completely lost. Mittendorf <sup>99</sup><sub>Aug. 14</sub> has seen a case of embolism of the upper branch of the retinal artery, with preservation of normal central vision, the macular region being supplied by the lower branch. In the inferior field vision was lost. Under treatment, consisting of pressure, massage, and digitalis, vision partially returned. An extremely rare and interesting case of total blindness due to embolism of the central artery of the retina in both eyes is reported by Dujardin. <sup>220</sup><sub>Feb. 14</sub> The patient, a man of 56 years, had been subject to frequent attacks of acute rheumatism from his 15th year, in one of which the heart was affected. The loss of vision had occurred in the left eye six years after the right had suddenly been deprived of sight. This case illustrates the danger of a later occurrence of embolism in the sound eye, and the importance of taking care to recognize and to control the general condition underlying this accident. This is the second case of the kind reported by this author within the year. The first observation <sup>220</sup><sub>Dec. 20, '89</sub> was in the person of a man 68 years old, in which embolism of the central retinal artery of the right eye had been followed in three months by an equally sudden accident of the same kind in the left eye. In this case no constitutional cause could be assigned. Snell <sup>6</sup><sub>Mar. 1</sub> has seen a case of *profuse retinal hæmorrhages* in the right eye, associated with *purpuric spots* on the extensor aspects of the forearms, more pronounced on the left side. The urine was albuminous and the left ventricle of the heart was hypertrophied. There were no



white patches in the retina. A case of hæmorrhage into the retina and between the retina and vitreous, coming on one week after a blow on the eye from a piece of iron, is described by G. S. Norton.<sup>776</sup><sub>Jan.</sub> It is interesting to know that glaucomatous symptoms developed eight months later. A chromo-lithograph is given of the intra-ocular condition. The result of numerous observations upon retinal hæmorrhages is given by Masselon.<sup>173</sup><sub>May</sub> He finds that in some cases a hæmorrhage may be so completely absorbed as to leave either no trace or simply an irregularity in the epithelial layer of the retina; that in others the site is marked by blackish pigment splotchings, rounded or elongated, and sharply circumscribed. When, however, the nutrition of the retina has suffered, he has observed that an old hæmorrhage appears as the white, brilliant, more or less shining streak of a fatty degeneration. In arterio-sclerosis the retina may be sprinkled with numerous areas of these fatty plaques. He finds that sudden ischæmia of the retina, as from central embolism or pressure from clot, favors this degeneration, which is especially frequent in the macular region. Minute hæmorrhages caused by progressive myopia are manifested by such permanent fatty changes. Large hæmorrhages, which have torn the retina and extended into the vitreous humor, in time appear as a fibrous, irregular net-work, partly in the retina, partly in the vitreous body.

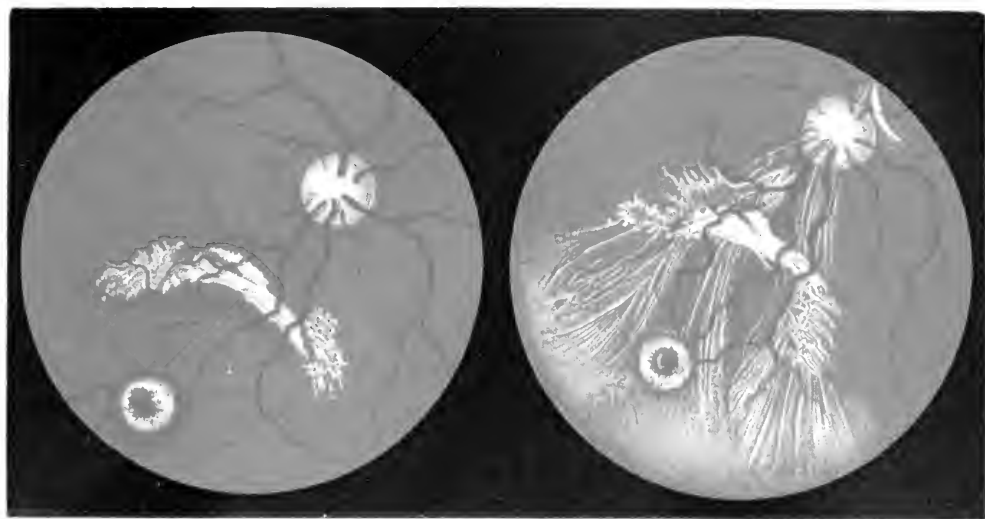
Gould<sup>249</sup><sub>Jan.</sub> most properly believes that long-standing, uncorrected *ametropia* may result in *permanent lesion of the macular region*. He says that it is usually accompanied by pigmentary changes, with deterioration, probably permanent, of visual power and acuity. A series of cases presenting minor lesions in the macular region is reported by de Schweinitz.<sup>61</sup><sub>Oct. 18</sub> He says that they may with propriety be referred to the fourth group of Haab's classification, "in which no etiological factor, within or without the eye, is discoverable; that is, discoverable in the sense that it is not possible to point with any certainty to any one determining cause." The author states that for convenience of study these causes may be classified into several groups: "1. Asymmetrical lesion,—situated in the macular region of the eye presenting the greater error of refraction. 2. Symmetrical macular changes,—symmetrical refraction error. 3. Asymmetrical lesion,—situated in the macular region of the eye, presenting the smaller error of refraction. 4. Symmetrical macular

changes,—asymmetrical refraction error ; probable influence of constitutional derangement. 5. Slight macular changes,—the apparent result of exposure to bright sunlight.”

Adele M. Field<sup>235</sup><sub>Jan</sub> has investigated the *color-sense and color-blindness among the Chinese*. Among 1200 persons, 20 were found either red- or green- blind, 19 being men, 1 was a woman, 4 of the color-blind men being her sons. Peterson<sup>1</sup><sub>Aug. 30</sub> gives an almost unique instance of homonymous hemiopic hallucinations, deeming them due to irritation in the cortical visual area. A case of hysterical amblyopia affecting the left eye of a 9-year-old colored girl is reported by de Schweinitz.<sup>242</sup><sub>Apr.</sub> There was complete hemianæsthesia of the left side, with anæsthesia of the conjunctiva. By means of the ordinary tests the presence of sight in the eye was readily demonstrated, and under the administration of a placebo the vision gradually returned. From his experience with gelsemium in the treatment of 2 cases of tobacco amblyopia, Phillips<sup>776</sup><sub>Apr.</sub> considers the drug to be a remedy of some importance. In the first case the progress of the disease was temporarily arrested, and in the second case improvement in vision took place in one eye, while in the fellow-eye the regression of vision became less rapid.

A case of tobacco amblyopia in a middle-aged woman has been reported by Priestley Smith.<sup>2</sup><sub>Apr. 26</sub> The patient had acquired the habit two years previously for the relief of asthma. The author refers to the very frequent history of mental worries and troubles in such cases, and believes that the depression arising from these anxieties renders the system more liable to poisonous influences.

An interesting case of *bilateral cystic degeneration of the retina*, occurring in a young woman, is reported by Darier.<sup>274</sup><sub>May, June</sub> Ten years before coming to the author's observation, at the age of 23, the left eye had been enucleated by Panas for supposed sarcoma of the retina ; but the examination revealed that the globe was filled by a cystic, lobulated mass, consisting of degenerated retina, forming the outer wall of a cyst which was limited behind by the choroid. This cyst held a limpid, slightly tinted liquid containing a large quantity of cholesterine crystals and “phosphatic globules,” analogous to those found in the cases described by Poncet in *synchysis scintillans*. When the patient came under the author's care the right eye had begun to be affected by a similar condition. The



Bilateral Cystic Degeneration of the Retina (Daher)  
Archives d'Ophtalmologie



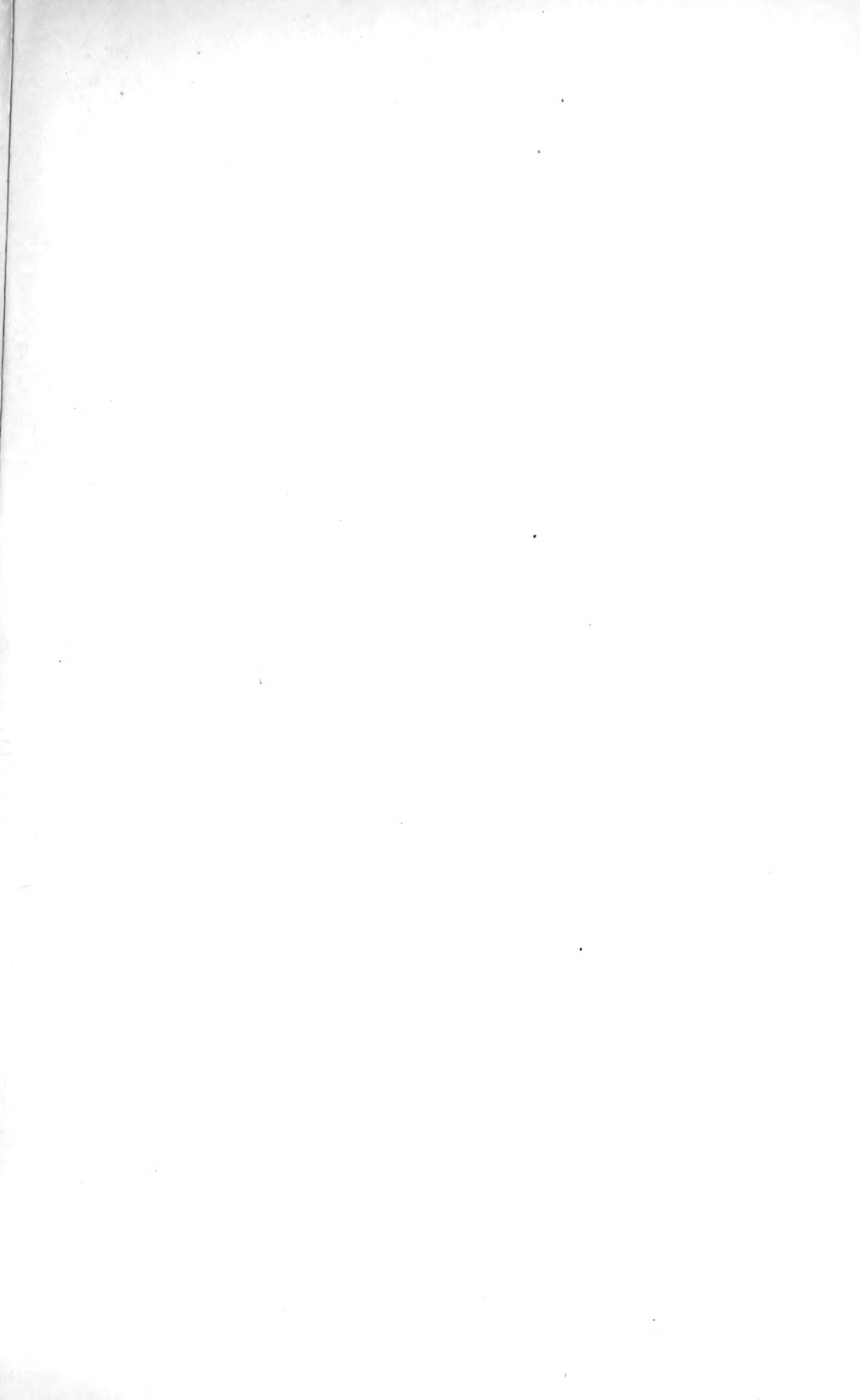




FIG 3



FIG 2



us (Schleich)  
r Augenheilkunde





slowly-changing appearances of the fundus are well shown in the accompanying chromo-lithographs.

Schleich<sup>353</sup><sub>Jan.</sub> adds 2 new cases to the list of *spontaneous connective-tissue new formations* in the retina and in the vitreous body (retinitis proliferans of Manz). In both cases circulatory disturbances in otherwise perfectly healthy individuals were present. Retinal hæmorrhages marked the beginning of the lesion. In 1 case these hæmorrhages came on repeatedly at the period of menstruation. The author considers, with Leber, that the new formation arises from these hæmorrhages, and regards the vascular disturbances as the probable etiological factor. The new formation, he believes, is superimposed on the retina, the latter being affected only secondarily, and not gravely and primarily, as Manz assumes. The accompanying chromo-lithographs show the ophthalmoscopic pictures greatly magnified. Another case of the same affection is reported by Pröbsting<sup>353</sup><sub>Feb.</sub>. The ophthalmoscopic picture is given in the small chromo-lithograph. Unfortunately, the initial stages were not observed, the patient presenting himself late in the history of the case. The main features are identical with those described by Schleich.

A valuable anatomical and clinical study of *glioma of the retina*. is published by La Grange.<sup>274</sup><sub>Sept., Oct.</sub>

Norton<sup>776</sup><sub>Apr.</sub> reports a case of glioma of the retina in which enucleation of the eye was followed by an appearance of the growth in the stomach. Bock<sup>190</sup><sub>Jan.</sub> reports a case of glioma of the retina, which is interesting from the fact that it developed most rapidly toward the anterior segment of the eye, forming an extra-bulbar tumor, while yet the optic nerve was uninvaded and the retina little involved, a considerable degree of vision being preserved. Two instances of glioma of the retina have been seen by Carmalt.<sup>59</sup><sub>Aug. 9</sub> In the first case, that of an infant 18 months old, both eyes were affected. The globes were enucleated, and one year later there was no return of the growth. In the second case the lens was cataractous, and the presence of the growth was not at first recognized. Later, the eye became disorganized and was removed. After a period of one year the orbit was found to be filled with neoplasm, and thus the original disease was recognized. Then growth was extirpated. Five months later the child died, and the autopsy revealed a tumor occupying the anterior portion of the

brain, with a second one in the right cerebellum. The *differential diagnosis between glioma of the retina and sarcoma of the choroid* is exhaustively studied by Martin.<sup>188</sup><sub>May 11</sub> His conclusions are quoted as follows: "The results of direct examination of the patient are far from being always clear, complete, and in harmony with the conceptions furnished by anatomical studies; the age of the patient is a most valuable element in diagnosis; the long-established law is true: 'glioma is the cancer of intra-uterine life and early infancy'; researches on this subject show that the youngest child affected with a sarcoma was 2 years of age (Fuchs), while glioma became very rare after four years, and has never been observed after twelve years (de Wecker)." He further states that glioma can be binocular, while sarcoma has never been observed in both eyes, and says that several children of the same family may all be affected with glioma, while in the case of ocular sarcoma heredity has never been remarked (de Wecker). Eissen<sup>190</sup><sub>Mar.</sub> reports an interesting case of melanosarcoma of the retina similar to that reported last year by Hirschberg (ANNUAL, 1890). The first subjective symptom of the disease was a defect in the external field of vision, which, after increasing up to a certain extent, had then remained stationary for four years. The patient had experienced no pain. An intercalary staphyloma seems to have appeared late in the course of the disease, the whole period of development up to enucleation being seven years. The tumor was found to be of the round-celled, melanotic type.

*Diseases of the Optic Nerve.*—W. F. Smith<sup>249</sup><sub>v.19, Nos.2,3</sub> reports a case of *immediate blindness from a penetrating wound of the cheek and orbit* inflicted by the tine of a hay-fork. Examination showed a small wound about half an inch below the alveolar process of the superior maxillary bone and half-way between the chin and the angle of the lower jaw. The course of the wound could be traced upward, backward, and inward through the cheek. An opening was found in the mucous membrane over the alveolar process and near the root of the second molar tooth. There was no evidence of fracture and no symptom of cerebral lesion. The ophthalmoscope showed clear media and normal circulation of the fundus. One month later there was a slight pallor of the optic disk. From experiments made upon a skull, the author found that when pressure of an instrument was made anywhere within

half an inch of the position of the second molar tooth, the adjacent bones formed a sort of funnel which drove the instrument directly to the optic foramen; and he is, "therefore, forced to the conclusion that the tine of the fork had actually crushed the optic nerve just where it enters the orbit."

H. O. Ferguson<sup>1000</sup> gives the notes of a case of *optic neuritis following exposure to heat*. The patient, a girl 5 years of age, had enjoyed good health until "the third day of a hot wind, thirteen days before her visit," when she complained of pain behind the right ear, lasting three days. On the fourth day her sight was noticeably defective. The ophthalmoscope showed the right disk to be blurred, the retinal veins large, and the arteries small and indistinct. The nasal side of the left disk was swollen. Vision in the right eye equaled "fingers at  $\frac{1}{2}$  millimetre and that of the left eye motion of the hand." Symptoms of meningitis appeared and the swelling of the disks increased. After eight months of active treatment vision equaled  $\frac{6}{6}$  in each eye and the fields of vision became normal, but the recognition of retinal impressions seemed slow. Both disks were very sharp and white and the arteries small. The author says that "the fact of the child's physical and mental health being good four and one-half years after the attack, and the absence of any cerebral symptoms in the meantime, except an occasional headache on a hot, windy day, practically put the existence of a cerebral tumor out of the question; and of the family history being good, except that the mother is neurotic, there is absolutely no doubt." In speaking of optic neuritis, Jeaffreson says that "the weight of the evidence seems to point to optic neuritis arising most frequently from direct extension of the inflammatory process along the nerve to the disk, not excluding altogether the influence that distension of the nerve-sheath can play in exaggerating the condition and, perhaps, even, under circumstances of giving rise to it."

Lèques<sup>243</sup><sub>Mar.</sub> reports a case of optic neuritis with subsequent atrophy in the person of an infantryman aged 23 years, as the result of exposure to extreme cold while on guard duty all night. The patient's brother was subject to rheumatism, and he himself had suffered from what was probably a rheumatic sciatica.

Calderon<sup>792</sup><sub>June 6</sub> also reports a case of descending optic neuritis in a man of 24 years. Subsequent autopsy showed it to be

dependent upon a hydatid cyst in the left lateral ventricle of the brain.

Ulrich<sup>254</sup><sub>Aug.</sub> describes a case of *unilateral incipient choked disk with bilateral partial optic atrophy*. He believes that he finds in it a corroboration of his former conclusions that the inflammatory signs noticed in choked disk are of secondary nature; that this condition of the nerve-head, in its earliest stage, depends principally upon œdema due to passive congestion; and that the atrophy of the nerve-trunk develops independently of the changes in the disk, in consequence of the intra-neural pressure from the œdema.

Tiffany,<sup>155</sup><sub>Jan.</sub> after giving a brief account of the effects of *tobacco on the system* in general, with a short and interesting historical *résumé* of the subject, refers to its special action on the optic nerve. Several cases of amblyopia are cited in illustration.

Having observed 3 cases of *monocular atrophy*, in which the history of previous injury to the spine was obtainable, Sterling<sup>776</sup><sub>Apr.</sub> is led to consider the possible etiological bearing of the traumatism to the optic-nerve disease.

*Wounds, Injuries, and Foreign Bodies.*—Leplat<sup>171</sup><sub>May, June</sub> presents a careful study of the ocular symptoms that may be caused by contusions of the globe not sufficiently severe to produce definite surgical lesion. His cited cases showed decreased tension, deepening of the anterior chamber, mydriasis (with “relative myosis” in semi-obscurity), paresis of accommodation and temporary refractive changes. In several cases he has noted a peculiar form of pupillary change which he thinks has not been previously commented upon. In full light, the pupil of the injured eye is not contracted to the same extent as its fellow, while in obscure light it is not dilated so widely; in other words, dilatation and contraction are diminished. This condition he ascribes to a paresis of the terminal fibres of both the oculo-motor and the sympathetic nerves, —a theory in contradiction to that of de Wecker, who holds that the mydriasis is complete, *i.e.*, paralysis of the oculo-motor with irritation of the sympathetic fibres. He has observed the persistence of this symptom as long as thirty-one months after the injury. Occasionally he has seen a slight functional myopia developed through spasm of accommodation, as has been described by other writers. The deepening of the anterior chamber which he has noticed he claims is due to diminution of volume of the vitreous

body and rigidity of the enveloping membranes of the eye, stating as a cause of the former phenomenon the suspension or diminution of action of the sympathetic nerve, which he asserts to be the nerve presiding over the production of intra-ocular fluids. He likens the effect of traumatism upon nervous filaments to the condition of cerebral concussion.

According to researches of Widmark,<sup>78 Aug.</sup> the *ocular troubles due to exposure to electric light* or snow are produced by a direct irritation of the parts affected; and, moreover, this irritation is caused almost exclusively by the ultra-violet rays, which, as is known, exert a similar influence upon the skin. These rays can also provoke opalescence or even striated opacities of the lens. Bock<sup>190 Oct.</sup> reports 3 cases of central scotoma caused by observing a solar eclipse. In only one instance did the ophthalmoscope reveal a change: a dark, brown-red color in the region of the macula. Jaume and Mátas<sup>792 May 19</sup> relate the case of a man in whom a flash of lightning produced a blepharospasm and facial erythema.

Panas<sup>212 July</sup> considers the various *affections that may follow a traumatism* of the eye, and emphasizes the importance of careful examination when the patient is first seen. He concludes that in the event of eye injury atropine should be employed only when the tension is normal. In cases of increased tension, myotics, such as eserine or pilocarpine, are indicated. Operative interference with traumatic cataract is not to be thought of unless glaucomatous symptoms supervene. Even under these circumstances, he advises repeated puncture and a continuance of myotics before recourse is had to iridectomy with extraction of the lens. In the majority of cases he thinks these first means, associated with antiphlogistics, dry or wet cupping, mercurials, or cold, will be sufficient to produce a rapid subsidence of acute symptoms. In lime burns of the eye, Guiot<sup>14 June 8</sup> has adopted the following treatment, with which he has had excellent results: The eye, having been anæsthetized, is thoroughly washed. With needle or spud all adherent particles of lime are removed, and then careful lavage is made with a saturated solution of cane-sugar, which forms an inert saccharate of lime. Atropia and cocaine and iced compresses complete the dressing. He claims that the cure is always made without complication, and that there is never any trace of the original injury remaining. In reporting several cases of the

extraction of iron splinters from the vitreous humor, Fischer,<sup>254</sup><sub>Aug.</sub> of Dortmund, emphasizes the importance of examining the instruments used (hammer, chisel, etc.), in order to detect the loss of fragments chipped off, and thus to help confirm the diagnosis, especially in those cases of corneal perforation in which cataract has formed before the patient comes under observation. In the latter case, he adds, the condition of the iris is often of great diagnostic value; if it is not at all adherent, or with one limb of the coloboma only slightly adherent to the cornea, the presence of the foreign body is corroborated.

In 100 cases in which he used the *magnet to remove foreign bodies from the interior of the globe*, Hirschberg<sup>204</sup><sub>Oct.23</sub> reports 13 successes; while prior to the use of this method he had not one good result. In one of his cases the body weighed 186 milligrammes ( $2\frac{9}{10}$  grains), the largest, he claims, so far reported. He formulates the indications and modes of procedure under varying circumstances. Bourgeois<sup>577</sup><sub>Sept.</sub> reports a case of successful suture of the cornea for a stellate wound produced by the explosion of a bottle of champagne. Three fine threads of catgut were used and allowed to remain until absorbed. The union of the corneal wound was perfect, but the anterior chamber had disappeared and vision was limited to light perception.

Snell<sup>2</sup><sub>Nov.8</sub> reports 40 additional cases in which he has employed the electro-magnet for the removal of foreign bodies from the globe. Derby<sup>99</sup><sub>Apr.17</sub> reports a successful extraction of a fragment of iron from the interior of the eye by means of a Bradford electro-magnet.

Bunge<sup>77</sup><sub>Aug.31</sub> claims to diagnose the presence of particles of iron within the eye by a peculiar coloration of the cornea and iris, dependent upon a precipitation of metallic products after dissolution of the iron by the carbonic acid of the vitreous body and the oxygen of the arterial blood.

Peuch<sup>78</sup><sub>May 18</sub> reports a case of *suture of the sclerotic for penetrating wound*, in which two months later retinal detachment, almost totally blocking the pupil, was found to have taken place. He asserts that in all the operations of this character which he had seen or had practiced himself, detachment of the retina, if no more serious sequel, had supervened sometime within eight months after the operation. He believes that the majority of reports of successful cases are published too soon to be of much scientific value. Retinal

detachment, however, he observes, is a comparatively fortunate accident. He further states that if it should happen it may remain limited, and not interfere too much with vision. In such cases, even the operation is both justifiable and conservative.

Raynaut<sup>46</sup><sub>Feb. 28</sub> reports a successful case of suture of the sclerotic for a large penetrating wound of the globe caused by a piece of broken glass. The cut measured at least  $2\frac{1}{2}$  centimetres in length, commencing at the outer side and above and extending downward and inward nearly to the cornea. Several months after the accident the visual field was found to be of normal extent and  $\frac{2}{3}$  vision had been regained. This result was particularly gratifying, inasmuch as the patient's uninjured eye was amblyopic from long-standing squint.

Barclay<sup>557</sup><sub>July</sub> gives a short account of a case of corneal wound with prolapse of the iris and traumatic cataract, followed by iritis, sympathetic irritation, and threatening glaucoma. Extraction of the cataractous lens caused the eye to become quiet in less than a fortnight. Three cases of traumatic rupture of the ocular muscles are reported by Viciano.<sup>274</sup><sub>Nov., Dec., '89</sub> He recommends suture of the divided muscle, when the case is seen within twenty-four hours after injury. When a faulty attachment has already been formed, he advises capsular or muscular advancement. Persistence of diplopia may, further, require tenotomy of the antagonist or of the corresponding muscle of the other eye. Nuel<sup>293</sup><sub>June</sub> details the case of a man of 29 years, injured about the head in a railway accident, who, two months after the injury, was found to present left nasal hemianopsia and paralysis of the left superior oblique muscle. After considering the localization of lesions affecting optic nerve-fibres and their internal prolongations, he locates the cause of the visual defect under consideration in the left lateral angle of the chiasm, judging the exciting cause to be a hæmorrhage at this point which had occurred at the time of the injury. The paralysis of the pathetic could be explained by pressure on the trunk of the nerve, probably by a part of the same hæmorrhage that was responsible for the injury to the optic nerve. Exophthalmos with subluxation of the globe, following whooping-cough and perhaps a blow, has been observed by Chibret<sup>173</sup><sub>Jan.</sub> in a girl of 8 years. The use of a rubber bandage and a compress of cotton effected a cure in twenty-five days.

The successful *extraction of an intra-ocular cysticercus* is reported by Gast.<sup>353</sup><sub>Jan.</sub> Treitel<sup>254</sup><sub>Apr.</sub> mentions 2 similar cases, one from the vitreous, the other from beneath the retina.

A case of *foreign body imbedded in the eye* for four and one-half months, without decided inflammatory reaction, is reported by Zirm.<sup>353</sup><sub>Aug.</sub> In view of the fact that foreign bodies can remain inoffensive in the ciliary region for many years, and that a sympathetic irritation can be subsequently excited by a very slight injury, Teillais<sup>173</sup><sub>May</sub> believes that we should maintain the existence of a sympathetic ophthalmia of ciliary origin, which differs essentially in its course from infectious ophthalmia. Webster<sup>81</sup><sub>July</sub> gives the notes of a case in which a flake of steel lodged in the ciliary region caused sympathetic irritation one year after the accident. Millikin<sup>9</sup><sub>Nov. 8</sub> reports the removal of a foreign body which had remained encysted in the eye about nineteen years. Repeated attacks of inflammation occurred. When examined, seventeen years after the accident, there was a lineal opacity in the cornea, a slit in the iris, and an oblique track through the body of the lens. In the anterior portion of the vitreous a grayish-white mass, apparently an encysted body, could be seen. On account of an enlargement appearing over the sclera and increasing in size, an incision was made over the swelling twenty-two months later. After the escape of a few drops of pus a number of hard, black particles were scraped out with a spoon. As much of the interior of the sac as possible was removed. The eye recovered without a bad symptom, and the body previously seen in the vitreous could no longer be detected. Regarding the prognosis of retained foreign body in the globe, Elschnig<sup>254</sup><sub>Aug.</sub> believes that if it has caused, by its presence, an inflammation in the ocular tunics, the danger of sympathetic inflammation of the other eye has not passed with the subsidence of inflammatory signs in the injured organ. On the other hand, he thinks that, if no inflammatory reaction has followed the accident, the foreign body has likely been aseptic and the danger of sympathetic ophthalmia is slight. Lewis<sup>776</sup><sub>Jan.</sub> reports a remarkable case of tolerance of an eye to a foreign body. Thirteen years previously the patient had been struck in the left eye by an iron burr, which had become imbedded in the ciliary region. It is interesting to note that there had been recurrent attacks of inflammation in the eye, but no symptoms of a sympathetic in



volverment. The globe was enucleated after attempts at extraction of the mass had failed. Lotz<sup>353</sup><sub>Sept.</sub> reports 2 interesting cases of very large foreign bodies in the orbit, causing neither protrusion nor immediate disturbances in motility of the eyeball. One patient, a child from whose orbit a large piece of slate-pencil was removed, died subsequently of meningitis. No cerebral symptoms had existed before the removal.

Grosman<sup>57</sup><sub>May</sub> cites a case of *rupture of the choroid*, occupying the lower inner portion of the fundus, as the result of a blow from a piece of wood on the anterior portion of the eye. Wicherkiewicz<sup>78</sup><sub>June</sub> reports a curious case in which the broken fragment of a knife-blade, 46 millimetres by 14 millimetres, was removed from the floor of the orbit, where it had been firmly imbedded for two years. Its presence was unsuspected by the patient, who came under observation for a localized inflammation of the sclerotic which the foreign body had provoked; and it was only on close examination that the orbital tumor was discovered by the surgeon.

When *enucleation* is urgently demanded, Fernandez<sup>459</sup><sub>Mar.</sub> most properly believes that the co-existence of pregnancy does not contra-indicate the operation. A remarkable paper by de Wecker<sup>171</sup><sub>Oct., Dec., '89</sub> strongly condemns what he calls the modern "abuse of enucleation." He affirms that the only conditions at the present time under which enucleation is indicated are traumatic infection of the injured eye, with or without penetration of a foreign body (according to the migration theories of Leber and Deutschmann), and the development of a malignant intra-ocular tumor. He sweepingly condemns enucleation in the case of an eye very painful and blinded by glaucoma, causing sympathetic irritation; in cases of blindness following irido-choroiditis, and in cases of well-developed staphyloma. These conditions he claims to treat successfully by repeated puncture of the sclerotic. The dangers of a migration ophthalmia, he believes, can be prevented, in cases of recent injury, by rigid and thorough antisepsis. To this Coppez<sup>78</sup><sub>Mar.</sub> makes an extended and able reply, and concludes by re-affirming the propositions of Warlomont, submitted to and adopted by the Ophthalmological Congress, held in London in 1872.

Rudall<sup>1000</sup> lost a patient by *septic meningitis following excision of a suppurating eyeball*. On the fourth day the man became

restless, and his temperature rose to 101.2° F. (38.4° C.). Upon examination the orbit appeared healthy, and the ophthalmoscope showed the disk in the remaining eye to be of a "rosy" hue, but with well-defined edges. Death in coma occurred three days later. Cheatham<sup>249</sup><sub>Jan.</sub> has seen acute mania follow the enucleation of an eye. The attack lasted ten days.

In reporting the *successful extraction of an intra-ocular melanotic tumor, with preservation of normal vision*, Rolland<sup>173</sup><sub>Jan.</sub> makes the following conclusions: "Immediate enucleation should never be done in case of an intra- and extra-ocular melanotic tumor, when the vision is normal and the subject in robust health; enucleation should be reserved for eyes disorganized by melanosarcoma; when vision is preserved, an attempt at extraction of the intra-ocular portion of the tumor should be made through a very long incision of the globe: such an operation performed with antiseptic precautions is not dangerous to the life of the patient; and lastly, as shown by the case reported seven months after operation, such a surgical operation makes possible the preservation of a useful eye."

Dolard<sup>274</sup><sub>Nov., Dec., '89</sub> reports 2 interesting cases of phthisical globe, in which numerous irregular star-like pigment massings were observed distributed for the most part along the retinal vessels and frequently infiltrating their external coat. The whole thickness of the retina showed extensive sclerotic changes, in the midst of which smaller pigmented granules were observed. Contrary to the opinions of de Lapersonne and Vassaux, and of Landolt, who suppose the existence of minute vessels of new formation along which are distributed the apparently isolated masses of pigment, the author denies such changes, and asserts that, in an essentially degenerative process, new vessel formation is extremely improbable. He believes that the pigmentary infiltration is a result of loss of vitality in the retina, and that the changes of sclerosis are of subsequent occurrence.

Two cases of *gunshot wound of the eye* reported by Hirschberg<sup>190</sup><sub>Apr.</sub> again demonstrate the lurking danger of infectious panophthalmitis while a foreign body remains within the globe, even if, as in one of the instances, the primary wound has healed perfectly and no sign of irritation existed for months. Merz<sup>347</sup><sub>Sept.</sub> has seen recovery with light perception follow extensive laceration of the

eyeball. Boé<sup>78</sup><sub>Aug.</sub> concludes that in presence of a panophthalmitis of rapid progress one cannot decide whether the process be capable of transmitting infection or not, and it is therefore irrational to hope for the prevention of infection by prompt enucleation. In such cases he advocates free debridement and frequent lavage.

Barrett<sup>1000</sup> has observed *panophthalmitis* follow the operation of *preliminary iridectomy* for cataract on an eye in which mucocoele existed. In the fellow-eye, in which mucocoele was also present, he had previously performed iridectomy with good success. An elaborate pathological study of panophthalmitis is presented by Schöbl.<sup>254</sup><sub>Apr.</sub> His principal conclusions are quoted as follows: 1. In panophthalmitis as a consequence of traumatism *per corneam*, without implication of the uveal tract, retinitis purulenta can be assumed as the primary change. 2. In case of traumatism *per scleram*, especially in the ciliary region, with direct injury to the uveal tract, the choroid coat plays the first and most important rôle. 3. In metastatic panophthalmitis, either purulent retinitis or purulent choroiditis, or both, may exist primarily.

Helfrich<sup>776</sup><sub>Apr.</sub> records a case of *serious hæmorrhage following enucleation of the eye*. The bleeding was finally controlled by injections of very hot water, application of ice-bags, and the internal administration of fluidrachm (4 grammes) doses of ergot. Webster<sup>347</sup><sub>June</sub> records a case of traumatism in which enucleation of the globe was rendered necessary by the appearance of symptoms of sympathetic irritation eighteen years after the accident. Goode<sup>61</sup><sub>July 19</sub> has seen sympathetic ophthalmia two weeks after the enucleation of the injured eye.

Gillman<sup>202</sup><sub>Apr. 10</sub> reports 2 cases of *recovery from sympathetic ophthalmia*. In the first case an iridectomy was performed, and was followed by subsidence of the inflammatory symptoms and a slow return of vision. In the second instance there was a plastic iritis with occlusion of the pupillary space in the sympathizing eye. After enucleation of the exciting organ a decided improvement occurred in the fellow-eye.

The infectious origin of sympathetic ophthalmia, as suggested by the investigations of Leber and Deutschmann, is strongly championed by Abadie.<sup>173</sup><sub>Apr.</sub> He cites 3 interesting cases, and concludes that enucleation should be reserved for cases in which the organ is destroyed beyond all hope. If, after grave injury, despite rigorous

antisepsis, sympathetic irritation appears, he thoroughly cauterizes the point of infection with the galvano-cautery and injects 2 drops of a 1-to-1000 sublimate solution within the globe. This procedure he has often found to abort a commencing sympathetic ophthalmia, and in some cases he has even succeeded in improving the usefulness of the injured eye. If, finally, despite this treatment, or, even after enucleation has been performed, sympathetic ophthalmia appears, he does not hesitate to inject the sublimate solution into the secondarily affected eye. One of his reported cases proves the most happy result of this latter method. As the only positive criterion of the correctness of Deutschmann's theory of this disease, Scheffels<sup>33</sup><sub>June</sub> suggests a comparison of results in a large number of cases after resection of the optic nerve. He begins the record with the report of 41 cases of this operation performed by Pagenstecher, as a substitute for enucleation, in which only 1 case of sympathetic ophthalmia, similar to that reported by Leber, occurred. To insure the desired immunity and to prevent the possibility of reunion of the ends of the divided nerve, he advises that the operation be performed at the earliest indication, and that a portion of the nerve be resected. He summarizes as follows: 1. In all those cases which suffer from a blind eye directly and exclusively, or in which, in addition, a sympathetic irritation of the other eye exists without the danger of true sympathetic inflammation, resection should take the place of enucleation. 2. In all cases in which a sympathetic ophthalmia is to be apprehended, inclusive of a foreign body within the globe, prophylactic resection should be practiced, and the first failure should at once be reported to exclude or confirm this indication. According to the clinical picture of cases belonging undoubtedly to the group of sympathetic inflammations, the author distinguishes between (*a*) the general type, commencing as inflammation of the anterior segment of the globe, with very unfavorable prognosis, and (*b*) inflammation beginning at the posterior pole, with relatively much more hopeful prognosis.

In studying a large number of cases of *perforating wounds of the globe*, Ohlemann<sup>251</sup><sub>Aug.</sub> finds strong clinical evidence against Deutschmann's theory of sympathetic ophthalmia in the rarity of this affection under conditions clinically recognized as most favorable for its development. He asserts that he is unable to find micro-organisms in any sections of the optic nerve taken from such

cases. The fact that the largest proportion of sympathetic ophthalmia occurred after perforating wounds at the corneo-scleral junction (5 per cent. of all such accidents) makes him incline to the old theory of sympathetic irritation, with trophic changes by way of the injured ciliary nerves.

Brailey<sup>78</sup><sub>Aug</sub> asserts that the disease does not occur without inflammation in the injured eye, although this often cannot be demonstrated except by the microscope; it is almost always a uveitis, most frequently plastic, sometimes, however, serous or purulent. Tension is generally increased at the beginning and diminishes later on. The sympathetic inflammation, he believes, appears either (*a*) as a papillitis or, much more frequently, (*b*) as a uveitis, generally of serous character. Sometimes hypopyon ensues, but never a true panophthalmitis. In the uveitis of the eye primarily affected and of the fellow-eye, the chorio-capillary and the pigmentary layers are never affected. He recommends enucleation, and asserts that when sympathetic disease ensues in spite of prompt operation the infection has started from the periocular tissue, which has also suffered injury. Galezowski<sup>173</sup><sub>July</sub> refuses to accept the theory of bacterial migration as the cause of sympathetic ophthalmitis. He believes that the cause is to be found in the ciliary nerves. In his own words he says: "A persistent irritation in these nervous filaments cannot continue without provoking an analogous irritation in all the fibres of other similar nerves in the same eye, which gradually progresses to other ciliary nerves of the fifth pair, and thence becomes concentrated upon the centre of innervation in the brain," and, as he says, "more particularly in the central part." Further, he asserts that "when once this central part is affected by a persistent irritation a sort of circumscribed encephalitis is produced, which gives rise to different nervous phenomena in the filaments of the fifth pair that are distributed to the sound eye, and ultimately to material lesions of the parts which receive their innervation from these nerves." While acknowledging the value and certainty of enucleation as a plan of treatment, he thinks that in some cases advantage is to be gained by preserving a shrunken globe after destroying the anatomical and physiological relations it holds with the sound eye. This he proposes to do by *circular debridement* of the globe, with section of the ciliary and optic nerves,—an operation he claims to have practiced with success.

Apropos of this plan of treatment, Boucheron<sup>3</sup><sub>July 10</sub> calls attention to the fact that in 1876 he proposed section of the optic and ciliary nerves behind the globe as a means of combating a sympathetic ophthalmitis appearing several years after a previous injury.

Fernandez<sup>459</sup><sub>June</sub> describes the technique of *exenteration of the globe*, and adds that he prefers this operation to enucleation on account of the remaining stump. H. O. Ferguson<sup>1000</sup> has performed the operation of resection of the optic and ciliary nerves in 15 cases, for which otherwise he says that he would have been obliged to perform enucleation. In all except one instance the result has been most satisfactory, there having been no material return of corneal sensibility, and as much relief from sympathetic irritation in the other eye as if excision had been done.

*Glaucoma.*—Laqueur<sup>254</sup><sub>Dec., '99</sub> records 6 cases of *glaucoma in young persons*. He believes that in early life the affection more frequently remains limited to one eye than at a later age. This, as well as the absence of constitutional maladies, in his opinion points to local disturbances as a cause of the ocular disease. Nicati<sup>3</sup><sub>Feb. 5</sub> has observed in glaucoma the existence of capillary varices, due to a spasmodic state of the iris and choroid. To these he attributes the production of intra-ocular œdema and consequent distension of the globe. He believes that, when to this is added obstruction to the outflow of intra-ocular fluid caused by the reflex spasm of iris and choroid, the mechanism of glaucoma is complete. Rudall<sup>1000</sup> gives the notes of a case in which iridectomy appeared harmful.

A case of *primary glaucoma* in a woman of 22, the subject of microphthalmos and hypermetropia, is reported by Watson.<sup>2</sup><sub>Mar. 22</sub> The glaucomatous condition was more pronounced in the right eye. A double iridectomy was performed, which resulted in an improvement to the left eye, tension becoming normal. A case of double glaucoma fulminans in a woman 45 years of age is recorded by Thon.<sup>1000</sup> The right eye was first attacked, and nineteen days later the left eye became similarly affected. Vision in each eye was totally abolished. Iridectomy was performed on the right eye without benefit, and the globe was subsequently enucleated. A better result followed the operation on the left eye, the patient finally being able to distinguish the outline of large objects. Fage<sup>70</sup><sub>Feb. 16</sub> reports 3 cases illustrating the value of Badal's plan of

excision of the nasal nerve for persistent, intense neuralgia excited by glaucomatous conditions. In 1 case, a shallowing of the anterior chamber from traumatic cataract, and in another, annular posterior synechiæ, due to previous iritis, rendered iridectomy out of the question. Badal's operation in both cases saved an enucleation. The third patient presented a very rapidly-progressive myopia, with increase of intra-ocular tension. In all 3 cases pain ceased immediately after operation.

Kollock<sup>76</sup><sub>Sept.</sub> reports 2 glaucomatous cases presenting unusual features. In the first case iridectomy was performed, and on the second day the tension suddenly increased from normal to stony hardness, and vision became "*nil*." This condition lasted for two days, in spite of the use of a weak solution of eserine; but, after the instillation of a 4-grain (0.25 gramme) solution, tension quickly became normal, and remained so. Vision returned and improved until, notwithstanding the presence of "high, irregular astigmatism, remaining from the excessive pressure on the cornea," it equaled with the correcting lens  $\frac{1}{4}\frac{5}{6}$ . The second case showed choked disk, with hæmorrhages and white patches in the retina. The urine was albuminous. Some days later tension increased to stony hardness, and posterior sclerotomy was done without giving any improvement. Seventeen days later the eye was enucleated. The fellow-eye was normal.

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#### SECTION IV.

##### MEDICAL OPHTHALMOLOGY.

Berry<sup>2</sup><sub>June 28</sub> saw 5 cases of *vaccine-pocks occupying the eyelids*. In every instance the pock was situated on the lower lid, and the margin of the upper lid contained one or more ulcerated patches, corresponding to the point of contact with the macerated surface of the primary vaccine-ulcer. There was great swelling, involving both the lids and the cheek. The resulting cicatrix was barely perceptible. There was no "spontaneous pain." In all the cases there was a distinct history of the possibility of inoculation. According to the author, the diagnostic differences between this affection and a chancre are that the syphilitic sore "is always a more distinctly clean-cut, eaten-out ulcer, which has taken a considerable time to develop from its first appearance as a pimple at the lid-margin.

The opposite lid-margin is not, as a rule, ulcerated. The base of the ulcer is greatly indurated, and the pre-auricular, as well as the sub-maxillary, glands are often swollen. There is no history which can in any way connect the case with vaccination, and usually one which renders syphilitic contagion possible. Lastly, secondary symptoms appear in due course."

In determining whether pain in and about the eye is neuralgic, A. D. Williams<sup>109</sup><sub>Feb.</sub> depends principally upon the presence of "tenderness of the flesh after an attack has passed off, or even while the pain is present."

Hamilton<sup>1000</sup> calls attention to the intimate anatomical relationship existing between the arterial, venous, and nervous supply of the nose and eye, and gives a list of cases in which disease of the nasal cavity was attended by reflex eye symptoms. Mullins<sup>85</sup><sub>Nor.</sub> relates a few cases of ocular disturbance dependent upon disease, which were rapidly cured by treatment of the exciting cause. In several cases of conjunctival irritation, Moore<sup>161</sup><sub>May</sub> has found pathological conditions of the nasal mucous membrane, the treatment of which resulted in relief to the reflex eye symptoms.

A case of *reflex amblyopia* in a boy aged 19 years, cured by section of the supra-orbital nerve, is reported by Dunn.<sup>1</sup><sub>Aug.9</sub>

Bernheimer<sup>78</sup><sub>Aug.</sub> endeavors to explain some cases of senile failure of vision by assuming the existence in the orbit of atheromatous arteries dissecting and dividing the tissues of the optic nerve, basing these conclusions upon a case which came under his care.

Lagrange<sup>188</sup><sub>Nor.16</sub> has seen a female patient aged 39 who came under treatment for a corneal ulcer. She presented, in addition, complete paralysis of the two trigemini, which was first noticed, as far as could be remembered, at about the age of 10 years. He excludes hysteria and raises the question of congenital absence of these two nerves. Further report of this case will be expected.

A case of ophthalmic migraine is reported by J. C. Da Costa.<sup>242</sup><sub>Apr.</sub> The patient, a woman who had passed the menopause, was in poor health, and was of a "nervo-melancholy" temperament, complained of the following symptoms: transient right lateral hemianopsia; numbness, anæsthesia, and muscular weakness in the right arm; violent pain in the ophthalmic division of the fifth nerve; scintillating scotoma and vomiting. Gould<sup>9</sup><sub>Aug.23</sub>



makes a most interesting and valuable address on the relation of eye-strain to general medicine. The conclusions formed by Starr<sup>59 Jan. 4</sup> as to the relation between peripheral irritation and nervous phenomena, with special reference to eye-strain, are that slight ocular insufficiencies do not produce discomfort; that, in view of the fact already established, variations in the muscular power are natural; that nature warns us of overexertion in any direction by means of conscious fatigue; and that, while eye-strain or other peripheral irritation might be a source of nervous manifestation, it is a rare cause of nervous disease. The author does not believe that true epilepsy or chorea can be produced by eye-strain or cured by its relief, and thinks that the general indiscriminate recommendation of treatment directed to the relief of supposed eye-strain in these diseases would soon come to be recognized as malpractice. Out of 3000 cases of nervous disease he can cite only 1 case of true nervous manifestation undoubtedly caused by eye-strain.

From the study of the *relation of errors of refraction and insufficiency of the ocular muscles to functional diseases of the nervous system*, Roosa<sup>1 Apr. 19</sup> concludes: "1. The eyeball of the human race is very rarely in what may be defined as an entirely emmetropic condition. 2. Perfect equilibrium of the ocular muscles is by no means a common condition, even among persons of sound health and without asthenopia. 3. Defects in these two states by no means necessarily produce even local disturbances, such as are comprehended under the term asthenopia, inflammation of the edges of the lids, etc., although high degrees of hypermetropia, moderate degrees of astigmatism, and all cases of mixed astigmatism are apt to do so sooner or later. 4. Asthenopia depends chiefly upon two sets of causes—nervous exhaustion and uncorrected errors of refraction. 5. In estimating the influence of these defects, great stress should be laid upon the general condition, and the line sharply drawn between asthenopia due to exhaustion and that to faulty refraction. 6. Nothing has been added essentially to Donder's discovery of the fundamental cause of accommodative asthenopia, except that astigmatism forms a more important factor in its etiology, muscular asthenopia falls to the background, while the definition of asthenopia has been much amplified by ophthalmologists. 7. The origin of a considerable class of such diseases as chorea, epilepsy, and hystero-epilepsy

has not been found in errors of refraction nor in insufficiencies of the muscles of the eyeball."

Baker<sup>61</sup><sub>July 19</sub> is led to believe that a large number of cases of "headache that cannot be cured by the correction of the error of refraction alone can be relieved by the use of systematic muscular exercise, by prisms, by tenotomies, or by a combination of all these methods, and that the same may be said, to a limited extent, of some cases of neuralgia, neurasthenia, chorea, and epilepsy." He says that the result of operative interference, if judiciously performed, is always more satisfactory than the wearing of prisms. Connor<sup>234</sup><sub>May</sub> is of the opinion that many cases of functional nervous disease result from waste of nerve-energy consequent upon refractive and muscular defects of the eye. Fulton<sup>105</sup><sub>Feb. 1</sub> reports several cases in which symptoms of grave disease of the nervous system were relieved by restoration of the equilibrium of the eye-muscles by means of graduated tenotomy. His conclusions in regard to the indications for the operation are "exactly those of Webster" (quoted in ANNUAL, issue of 1890). In an article on "The Relief of Remote Neuroses by the Restoration of Ocular Equilibrium," Allport<sup>61</sup><sub>Nov.</sub> says: "I believe that errors of refraction and ocular insufficiencies are a fruitful source of headache, head-neuralgia, and other neuroses situated in and about the eyes and head. I believe that such diseases can be remedied by the proper adjustment of glasses and by proper tenotomies. But I do not believe that chorea, epilepsy, and other remote neuroses are produced by errors of refraction or by muscular insufficiencies, except as such abnormalities indirectly cause an impairment of the general health, which might, in turn, present a favorable soil for the growth of the various neuroses. I have but little faith in graduated tenotomy, and believe that if a tenotomy is indicated at all a complete operation is necessary." A series of cases of reflex ocular neuroses cured by the correction of existing errors of refraction and muscle-balance is recorded by Gould.<sup>5</sup><sub>Jan.</sub> The list includes instances of stammering, chorea, functional gastric disturbance, and aphonia.

Beard<sup>249</sup><sub>Apr., July</sub> has seen relief from a grave type of epilepsy follow the correction of an exaggerated convergent strabismus. The patient, a man 52 years of age, had suffered for a period of eight or ten years previously from recurrent attacks of pain in the left eye and sensory nerves of the same side of the head.

During this period increasing convergent strabismus of the left eye was also noticed. Four or five years later paroxysms of ordinary epileptic convulsions occurred. Total deafness had been present for twenty-five years. Tendon resection, with advancement of the left external rectus, combined with free tenotomy of the internal rectus of the same side, was performed. Fifteen months later he had "neither suffered from the old agonizing pain nor had a single fit of epilepsy."

Chibret<sup>274</sup><sub>Mar., Apr.</sub> reports 7 new cases illustrating the influence of synalgic affections of the eye.

Syme<sup>1000</sup> found it possible to examine the *fundus* in 54 cases out of 120 suffering from *interstitial keratitis*, 100 of which were of undoubted hereditary syphilitic origin, and detected evidences of choroiditis in 47 instances. Out of 102 cases, iritis was either present or had left traces in 44. All three lesions were present in 17 instances. The author says: "So far as these observations go, therefore, they seem to me to tend to justify the conclusion that cornea, iris, and choroid are all affected in the majority of cases." He is of the opinion, with Hutchinson, that choroiditis may occur apart from syphilis. Lawford<sup>76</sup><sub>Apr.</sub> has observed 2 cases of ocular-muscle paralysis in subjects of congenital syphilis. The first case occurred in an unmarried woman, 26 years of age, whose family history was distinctly syphilitic, and whose physiognomy was very suggestive of congenital disease. Both corneæ were hazed from past interstitial inflammation. The upper incisors were stunted, the central ones being notched. The inward movement of the right globe was defective. On the left side there was almost complete ptosis, while the upward and inward excursions of the same eye were defective. Recovery took place under mixed treatment. In the second case, that of a man 25 years old, the family history was indefinite, but the physiognomy and teeth were suggestive. The corneæ were cloudy and posterior synechiæ were present. Ophthalmoscopic examination showed patches of choroidal atrophy. All the movements of the left globe were considerably limited, causing diplopia in all parts of the field, except outward to the patient's left, about 45° from the fixation point. The author is inclined to consider the lesion peripheral in both instances. The second case he believes to have been due to a periostitis, in which the nerve-trunks became involved either at the

sphenoidal fissure or immediately anterior to it. A double lesion is supposed to have existed in the first case. Four cases of chronic and recurrent hyperæmia of the bulbar conjunctiva due to syphilis are recorded by Alt.<sup>347</sup><sub>Dec., '89</sub> In all the instances the bulbar conjunctiva was slightly œdematous and of a scarlet-red color, while the palpebral conjunctiva was but little injected. There was no discharge. The irides reacted sluggishly to light. Vision, intra-ocular tension, and the visual field were all normal. The subjective symptoms were a continuous feeling of heat, dryness, and grittiness, increased in intensity and accompanied by profuse lachrymation when the eyes were used for near work. All the patients gave a distinct history of acquired syphilis, and were all cured of the eye affection by the administration of antisyphilitic remedies after local treatment had failed. The author states that this hyperæmia "is in no way to be confounded with the œdematous and hyperæmic condition so often seen in drinkers, nor, of course, with a catarrhal affection, there being no discharge."

Numerous *ocular manifestations of influenza* are reported by various observers. Gorecki<sup>173</sup><sub>Jan.</sub> has seen 2 cases of amblyopia, with diminution of accommodation and weakening of convergence. One of these patients had also subnormal color perception. Dubois de Lavigerie<sup>173</sup><sub>Jan.</sub> observed cases of severe ocular pains resembling those of glaucoma. Valude<sup>173</sup><sub>Jan.</sub> saw one case presenting a herpes of the cornea, and a second which was followed in a few days by a complete paralysis of the right external rectus. Chevallereau<sup>173</sup><sub>Jan.</sub> reported the case of a printer to whom, for several days following his attack, the types appeared much smaller than they were in reality.

Landolt, corresponding editor at Paris, France,<sup>3</sup><sub>Jan. 15</sub> reports a case of conjunctivitis and abscess of the lower lid, as *sequelæ* of the epidemic; and Galezowski<sup>173</sup><sub>Feb.</sub> observed 2 cases of conjunctivitis and 14 of herpes of the cornea. To these interesting cases Sedan<sup>173</sup><sub>Mar.</sub> adds 1 of a boy  $7\frac{1}{2}$  years old, in whom sudden complete blindness occurred, which lasted several days and as suddenly disappeared. In this connection Vignes<sup>170</sup><sub>July</sub> describes a case of monocular neuroretinitis, which appeared two weeks after the patient, a young man of 27 years, had suffered from an attack of influenza. Recovery took place, with restoration of  $\frac{4}{10}$  normal vision. Galezowski<sup>173</sup><sub>Feb.</sub> mentions 4 instances of this form of ocular trouble occurring after influenza. Gillet de Grandmont<sup>173</sup><sub>Feb.</sub> had opportunity of

observing a case of so-called "nona." It exhibited the characteristic symptoms of complete ophthalmoplegia externa, with congestion of the optic nerve-head, and rapidly yielded to local blood-letting.

As *sequelæ* of "la grippe," Alt<sup>347</sup><sub>Feb.</sub> has had several cases of conjunctival inflammation, an interesting example of œdema of the lids, a case of partial blindness (due to ischæmia of the retina), and an instance of insufficiency of the interni. Shapringer<sup>59</sup><sub>June 14</sub> has seen inflammation of Tenon's capsule as a result of this disease. Pflüger<sup>4</sup><sub>July 14</sub> reports 2 cases of inflammatory exophthalmos and 5 of paresis of the ocular muscles, which followed influenza. Wicherkiewicz<sup>57</sup><sub>Feb. 23</sub> considers the conjunctival injection, orbital pain, and disturbances in accommodation as a result common to all febrile affections. As directly caused by influenza he considers several cases of inflammation of the caruncle, of the semilunar fold and the adjoining episcleral tissue, cases of trigeminal neuralgia, and extensive phlegmonous inflammation of the lids. Several times he has seen unilateral suppurative dacryocystitis.

Stoeber<sup>184</sup><sub>May 16</sub> recognizes three periods in the course of an attack of influenza: the first characterized by nervous symptoms, the second by congestive accidents, the third by organic troubles. In the first period has been noted pain in the extrinsic muscles of the eye and in the muscles of the lids. During the second period symptoms were observed that were to be attributed to circulatory disturbances of the more profound parts of the organ; these were such as phosphenes and scintillations, hyalitis with floating bodies, retinal and choroidal hæmorrhages, and grave amblyopia without ophthalmoscopic changes. To this category are added recurrent affections of the cornea and iris, which seemed to present a prognosis more serious than is usual. In the third period appeared ocular symptoms which gave evidence of constitutional enfeeblement, such as are not unusual in the convalescence from other exhausting acute diseases; these were especially concerned with the intra-ocular muscles and gave rise to changes, such as insufficiency, early appearance of presbyopia, paralysis of accommodation, and even so-called crystalline astigmatism.

Uthoff<sup>69</sup><sub>Mar. 6</sub> has had cases of paralysis of accommodation. The affection developed suddenly, and in one instance showed peculiar fluctuations with rapid transition, so that the patient

could see near objects for an hour or so, and then would suddenly become totally unable to do near work for a similar period. One case was complicated by ophthalmoplegia externa, and exhibited the phenomenon of hippus-like contraction of the sphincter iridis. The author considers that the condition is analogous in measure to the paralysis of accommodation after diphtheria. Badal and Fage<sup>271</sup><sub>Mar., Apr.</sub> give a complete description of 32 cases of ocular disease complicating influenza. Of these there were affections of lids and lachrymal apparatus, conjunctivitis, eruptive kerato-conjunctivitis, infectious keratitis, iritis or irido-choroiditis, acute glaucoma, muscular paralyses, and amblyopia without ophthalmoscopic lesion. Remarking that almost all, if not all, of these affections are of infectious type, the authors are inclined to adopt a view in accord with Jaccoud's theory of intrinsic infection, namely, that the numerous microbes infesting the conjunctival sac, inoffensive in a state of health, become actively virulent when the vitality and normal resistance of the organism become weakened by the disease. Fuchs<sup>8</sup><sub>Mar. 13</sub> observed 1 case of suppurative and 2 of non-suppurative tenonitis following the epidemic. In the pus of the first case cocci were found which corresponded to the pneumococci of Fraenkel-Weichselbaum. According to Adler's observations,<sup>81</sup><sub>Jan. 25</sub> ocular diseases in connection with the epidemic were of infrequent occurrence. Inflammations of the conjunctiva and cornea were most common, several cases of the keratitis dendritica of Fuchs being observed. He also saw iritis and acute glaucoma, but cases of characteristic catarrhal conjunctivitis were very rare. Hirschberger's experiences<sup>31</sup><sub>Jan. 29</sub> differ somewhat from these. He saw a large number of abscesses with secondary œdema of the lids, and also numerous cases of catarrhal conjunctivitis. Keratitis dendritica was observed in three instances. He considers it probable that this affection originates in a herpetic febrile condition, which is simply the expression of trophic disturbances. Frank<sup>41</sup><sub>June 2</sub> describes 4 cases of corneal disease of the same nature as those reported by Hirschberger. He found that the time of its appearance was the seventh day of the epidemic disease. The comparison drawn between these cases and those reported by Kipp as following malaria is extremely interesting. Still different observations were made by Eversbusch.<sup>34</sup><sub>Feb. 11, 18</sub> A large percentage of his patients complained of considerable dull pain in the "depth

of the eye," aggravated by light and attempts at near vision. He holds that this pain was the expression of changes in the muscles of the eye, and asserts that this phenomenon is most frequently associated with the nervous form of influenza. His experience is very similar to that of Hirschberger. Like Adler, he has seen acute glaucoma under the form of irido-choroiditis serosa.

Natanson<sup>21</sup><sub>June 16</sub> reports a case in which, after pleuro-pneumonia following influenza, embolic bilateral irido-cyclitis developed, causing total blindness in a few days. A case of monocular amblyopia following an attack of influenza is reported by Angell.<sup>776</sup><sub>Apr.</sub> Vision was reduced to  $\frac{1}{100}$ , and a central scotoma for red existed. No ophthalmoscopic changes were observed. Recovery took place in six days without treatment. A case of acute retrobulbar neuritis following a moderate attack of influenza is reported by Hansen.<sup>59</sup><sub>Nov. 8</sub> Bergmeister<sup>8</sup><sub>Mar. 13</sub> saw 2 cases of retrobulbar neuritis, which resulted in more or less extensive atrophy of the disk. Stöwer<sup>353</sup><sub>Oct.</sub> contributes to the list a description of 2 cases of optic atrophy and 1 of oculomotor paralysis. The latter was combined with exophthalmos, which, as well as the paralysis, he believes, was caused by a sero-fibrinous retrobulbar exudate. The etiology of the other cases was less clear: the bilateral optic atrophy he considers as due to pressure, probably in consequence of a local meningitis.

A case of *neuritis of rheumatic origin* has been seen by Macnamara<sup>2</sup><sub>May 3</sub> in a 16-year-old boy, the son of a rheumatic mother. Vision was reduced to perception of light in the right eye. There was severe pain, great photophobia, and deep sclerotic injection, all of which were relieved by a large dose of salicin. The optic disks, however, remained white.

Sulzer<sup>353</sup><sub>July</sub> finds the following categories of *visual disturbances after malaria*: 1. Chronic optic neuritis, in grave cases associated with melanosis of the optic disk. 2. Diffuse infiltration of the vitreous body. 3. Numerous small hæmorrhages in the peripheral part of the retina. 4. Sudden incurable amaurosis, probably in consequence of central hæmorrhages or emboli. The peculiar affections belonging to the acute febrile period he enumerates as follows: 1. Periodical amblyopia of different degrees without ophthalmoscopic changes, which, in grave cases, may assume the form of complete amaurosis, lasting several days and disappearing after administration of quinine. 2. Pronounced, especially venous,

hyperæmia of the disk and retina, with predisposition to diseases of the macula caused by reflected sunlight. 3. Large foci of hæmorrhages near the papilla and macula.

From his own experience and from a careful study of the literature of the subject, de Schweinitz<sup>9</sup><sub>June</sub> concludes that malaria may originate: 1. An ophthalmia of the intermittent type, which sometimes replaces the ordinary manifestations of the disease. 2. A form of keratitis "quite distinct from those types of corneal inflammation which are simply associated with intermittent fever." 3. Various functional ocular disturbances, amblyopia, paresis of accommodation, changes in the field of vision, even hemianopsia and night-blindness. 4. Gross changes in the interior of the eye, optic neuritis, optic atrophy, retinal hæmorrhages, and hæmorrhage into the vitreous. He further believes that, "in the event of the appearance of any of the disorders of the fourth class, it is necessary, before ascribing it to malaria, to eliminate rheumatism, syphilis, chronic Bright's disease, and chronic hepatitis; and, in so far as atrophies are concerned, the influence of quinine." He correctly recommends that "in any doubtful case, especially in larvate forms of intermittents, and, indeed, in all cases, a careful examination of the blood should be made with the hope of determining the presence or absence of the corpuscles of Laveran."

Four cases of malarial neuritis and neuroretinitis are recorded by Macnamara.<sup>2</sup><sub>Mar. 8</sub> He says that in all the cases "there was an entire absence of symptoms indicating either meningeal or cerebral disease;" that "they all regained complete power of vision; they were not suffering from marked anæmia, although they had enlargement of the spleen;" that "there was no indication of serious renal mischief, nor was there any evidence of syphilis or rheumatism among them;" and that "all the patients were under the influence of malaria when they developed symptoms of neuritis affecting the distribution of the optic nerve." In one instance other nerves were implicated, probably through analogous changes. In explanation of the condition, the author "inclines to the idea that the inflamed state of the optic papilla is due to something of the nature of a microbe which becomes planted in the affected tissues, and, growing there, produces ptomaines, which in their turn cause irritation of the tissues, engorgement of the vessels, and transudation of serum and leucocytes into the retina and



optic papilla." G. Harlan<sup>59</sup><sub>July 26</sub> has seen transient amblyopia with bitemporal hemianopsia in a case of malarial cachexia. The patient was a sailor, aged 22 years, suffering from chills and fever, with headache, mania, hallucinations of sight and hearing, and perversion of taste and smell. The ophthalmoscope showed no gross changes, but the blood was found to contain great numbers of pigmented corpuscles. Under administration of large doses of quinine there was rapid disappearance of all symptoms.

Deutschmann<sup>204</sup><sub>May</sub> considers the nature of *gonorrhœal rheumatism from an ophthalmic point of view*. He describes 2 cases of articular rheumatism closely following gonorrhœal conjunctivitis in children. In one of these the effusion into the joint, the pus from the eye, and the discharge from the urethra of the mother were examined and found to contain cocci, which conformed in all respects to the descriptions of gonococci given by Neisser. Of especial value is the fact that in the pus of the joint (drawn off by a hypodermatic syringe) no other form of bacterium but gonococci was found. Kipp,<sup>59</sup><sub>July 22</sub> in speaking of gonorrhœic irido-choroiditis, says that if it be true that "the joint affection is the result of a diffusion of the gonorrhœal poison (probably gonococci) through the system by means of the circulation,—a kind of metastasis of the virus,—this can also cause an inflammation of the uveal tract."

Finlayson<sup>47</sup><sub>Feb.</sub> has seen right-sided "*isolated paralysis of the third nerve*" as a complication of Graves's disease in a woman about 37 years of age. The author says that the case seems "to have a certain value in supplying very definite proof of the implication of the third nerve in this remarkable disease."

Williamson<sup>90</sup><sub>Jan.</sub> reports a case of *double detachment of the retina* occurring in chronic interstitial nephritis, with hypertrophy of the left ventricle of the heart and enlargement of the thyroid. The man was but 24 years of age.

Hirschberg<sup>190</sup><sub>Jan.</sub> calls attention to the importance of *rapidly-developing myopia in elderly people* as a symptom of diabetes mellitus. Raehlmann<sup>353</sup><sub>Dec., '89</sub> makes a careful study of the circulation in the anæmia of chlorosis, and after chronic hæmorrhages. Basing his observations upon examination of the eyes of a large number of anæmic patients, he distinguishes two classes of cases, which differ also in their clinical relations: (1) those which show

retinal hyperæmia with visible pulsation of the retinal vessels; (2) those which exhibit narrowed arteries and retinal anæmia. Clinically, the cases in group 1 show reduction in the number of red blood-corpuscles, diminution in the size of the individual red disks, and a lessening of the amount of hæmoglobin contained in them (chlorosis). A definite demarcation, however, between the two groups does not exist. The phenomenon of pulsation in arteries so small as the retinals is explained in this way: the specific gravity of the blood being abnormally low, due principally to a diminution in the solid constituents, the friction of the blood-current is materially reduced; in consequence of this fact, the column of blood with each cardiac systole is propelled with greater velocity to a greater distance, the propelling force being normal, or even increased, while the resistance is diminished. This result is augmented by a weakening of the coats of the vessels, due to deficiency of nutrition because of impoverished blood. The hyperæmia so manifest in the eye he regards as uniformly present in the other peripheral vessels of the vascular system.

In a later article Laqueur<sup>353</sup><sub>Jan.</sub> dwells upon the importance of retinal pulsation as a positive sign of circulatory disturbances, and draws clear distinctions between true pulsation and the so-called pressure-pulse as noted in acute glaucoma, in the algid state, and in some other conditions.

Trousseau<sup>173</sup><sub>June</sub> reports the case of a young woman of 35, who consulted him for a *periodic monocular irido-choroiditis with hypopyon*, which regularly recurred at the time of the menstrual flow, to disappear with its subsidence. Throughout the term of a pregnancy, when menstruation was, of course, suspended, the ocular inflammation was in abeyance, but again made its regular appearance with the re-establishment of the function. The patient had had an attack of acute rheumatism three years prior to the first appearance of the ocular trouble, but anti-rheumatic treatment had proved unavailing.

Two cases of *hemianopsia following profuse uterine hæmorrhages* have been observed by Chevallereau.<sup>152</sup><sub>May 23</sub> Neither case presented any hysterical manifestation. In the first there was right lateral hemianopsia, the field of the right eye being the smaller; macular fixation was preserved in both fields. In the second case central fixation was lost in the left eye, the temporal field being

preserved; whilst the lower inner quadrant and a part of the lower outer quadrant in the right field was completely lost, the line of limitation passing directly through the point of fixation. He attributes the symptom to disturbances of cerebral circulation,—to an ischæmia caused by thrombosis of arteries either of the visual centres or of the optic tracts. A case of recurring œdema of the left upper eyelid, in a married woman 29 years of age, has been seen by Woods.<sup>77</sup><sub>Feb.</sub> The swelling of the lid appeared the day before each menstrual flow.

A case of sudden, temporary *blindness*, associated with cerebral concussion *following a severe blow upon the occipital region*, is noted by Dommartin.<sup>243</sup><sub>Mar.</sub> He regards it as a confirmation of the theory locating the cortical centres of vision in the cuneus, occipital convolutions, and the “pli courbe.”

Ratimow<sup>254</sup><sub>Dec., '89</sub> had under observation for one and a half years a case of pistol-shot wound of the right vertex, in which the visual power of the right retinal half of the right eye had disappeared immediately after the accident. The autopsy revealed obliteration of the convolutions of the posterior part of the brain, changes at the end of the right fissure of Sylvius, and purulent cavities in both occipital lobes. He looks upon this case as a corroboration of Munk's view regarding the site of the visual centre. A case of right hemiplegia with optic neuritis, in a boy 6 years of age, is reported by Suckling.<sup>6</sup><sub>May 10</sub> Ophthalmoscopic examination showed the neuritis to be more intense on the right side. The writer believes the lesion to have been a meningeal hæmorrhage, the result of a fall.

In a case of optic atrophy, with epileptiform convulsions on the fourth day of influenza, Remak<sup>190</sup><sub>July</sub> thinks that both conditions were the outcome of a meningeal inflammation. Recovery followed under the use of iodide of potassium and strychnine.

A case of temporary blindness following an attack of cerebrospinal meningitis, is reported by Stowell.<sup>1</sup><sub>Aug. 9</sub> Three years later the child had a violent attack of convulsions, which were more marked on the left side, this being followed by paralysis, mostly left hemiplegic in character.

Clevenger<sup>139</sup><sub>Sept.</sub> has seen a case of “*tabetic amaurosis*” in a girl 11 years of age. There was complete iridoplegia, with atrophy of both optic disks.

*Temporary cycloplegia* without paralysis of the sphincter pupillæ, as a result of injury to the head, has been seen by Hinshelwood.<sup>2</sup><sub>Feb.8</sub> A case of hæmorrhage into the left nucleus caudatus, followed by periodic right-sided spasms and conjugate deviation of the eyes to the left, is reported by Neumann.<sup>4</sup><sub>May 5</sub> The author considers it most probable that this peculiar phenomenon was caused by irritation of assumed uncrossed fibres of the abducens.

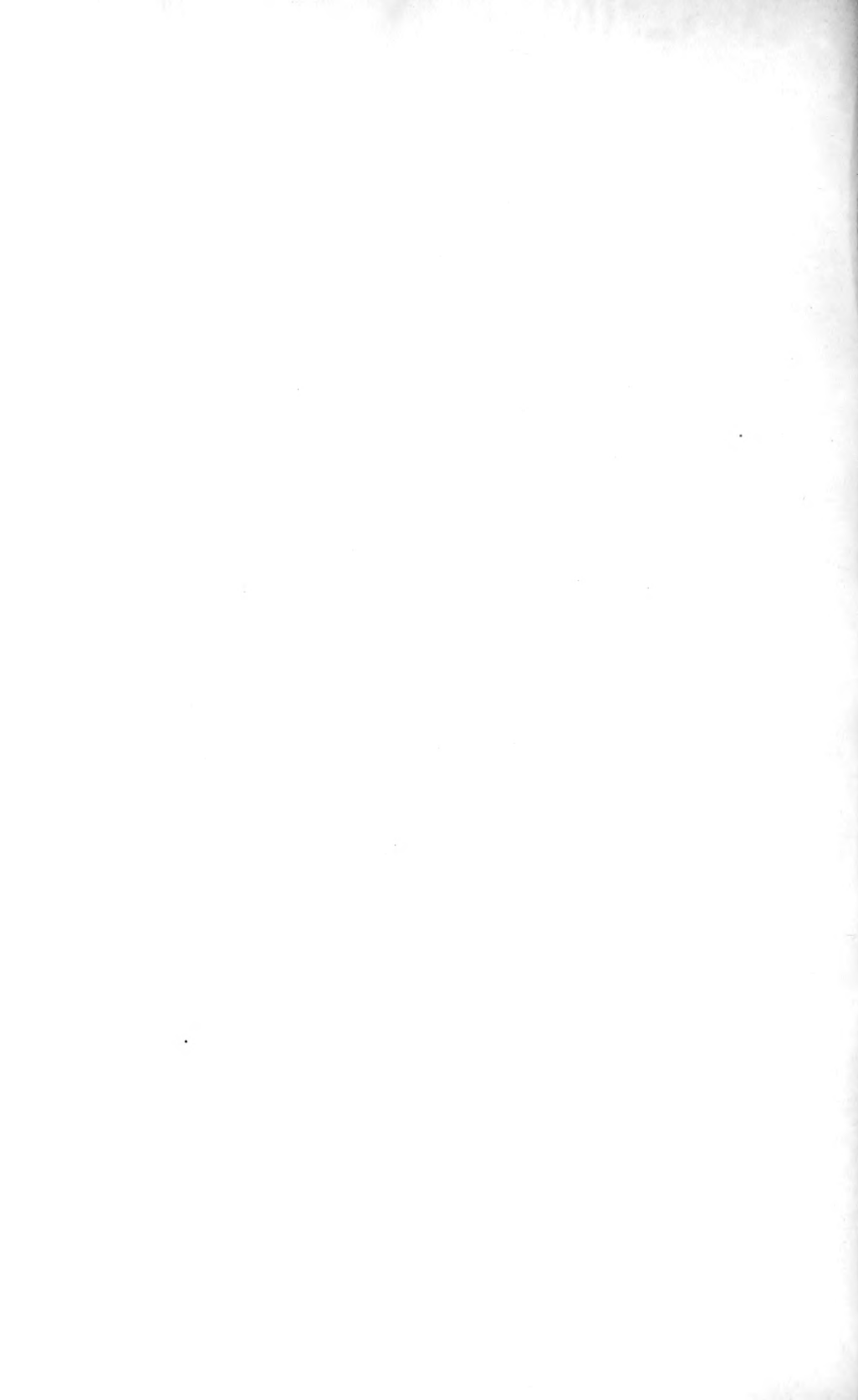
Parinaud and Guignon<sup>452</sup><sub>Sept., Oct.</sub> report an interesting case of paralysis of the abducens and facial of the right side, associated with right hemiplegia, the facial paralysis having the characteristics of a peripheral palsy, as shown by the involvement of the right orbicularis palpebrarum. The figures in the report show graphically the appearance of the patient while looking directly forward and toward the left, and, finally, the spasmodic action of the associated internal rectus of the left side when the fixation object was moved well toward the right. The patient was a young woman 20 years old, with no markedly bad family history. The co-existence, however, of slight modifications in the breath-sounds of the left lung lead the authors to attribute the cause of the paralysis of the facial and abducens to a tubercular tumor of the right side of the pons; the right hemiplegia, being unexplainable by the same lesion, they assume to be caused by a second tubercle somewhere in the left cortical or subcortical area,—a diagnosis which they assert has been confirmed by Charcot.

Manquat and Grasset<sup>73</sup><sub>Feb.8</sub> report a case of paralysis of the right oculo-motor, with hemiplegia and hemianalgesia of the left side (excepting the face) and aphasia, as the result of indirect violence produced by a fall upon the head. The right visual field was extremely concentrically contracted, while that of the left eye showed slight reduction. No ophthalmoscopic lesions were observed, and when the patient came under observation diplopic symptoms were no longer complained of. The authors agree in locating the lesion in the right peduncle, involving also the fibres of the oculo-motor nerve of that side in a point very close to their emergence. The co-existence of aphasia they explain (according to Charcot and Féré) by involvement of the internal fascicle of the foot of the peduncle, taking advantage of the fact that the patient was left-handed to locate his cortical speech-centre in the right instead of the left hemisphere.



Paralysis of the Facial and of the Abducens of the right side (Parinaud and Guignon).

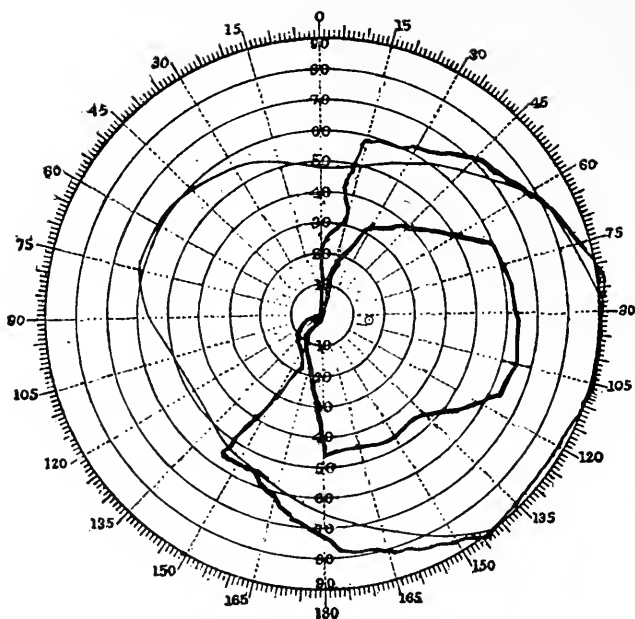
Nouvelle Iconographie de la Salpêtrière



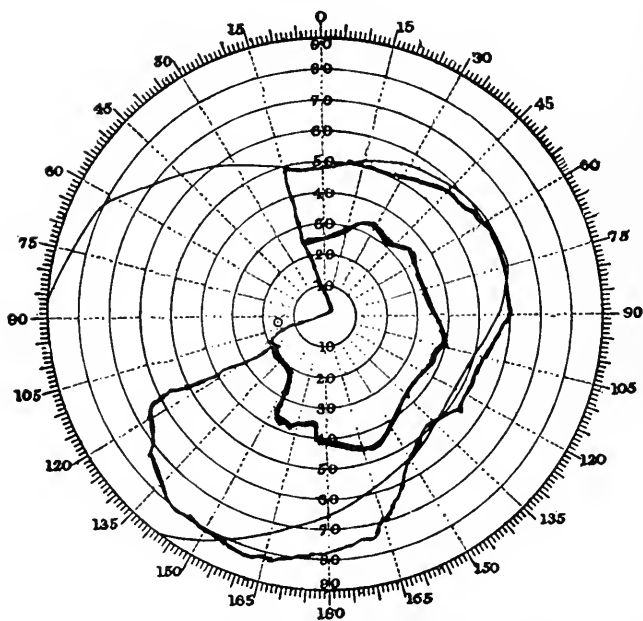
*Two cases of brain-tumor with interesting eye symptoms* are reported by Norris.<sup>1072</sup> The first was a glioma arising in the right central lobe and extending upward, involving the corpus callosum and septum lucidum. The patient, a woman of 32 years, was first seen by the author six months before her death. She then complained of asthenopia and dizziness after reading for a short time. In the right eye the accommodative power was nearly normal, while with the left eye the accommodation was less perfect, she reading with difficulty, for a moment only, Jaeger 1, from 7 to 9 inches. The left pupil was slightly the larger and rather more sluggish to light, but prompt in associated action. While no changes were observed in the fundus, the perimeter showed a relatively corresponding defect in the fields pictured in the first of the cuts shown on pages 132 and 133. Changes in the disks were not observed until about two months before death, when choked disk developed rapidly. At the time of the second examination the form of the fields had changed to that shown in the second cuts. The Wernicke sign was not present. The second case, also in a woman, proved to be a growth occupying the sella turcica, extending along the wings of the sphenoid on each side, reaching further on the right, where it was firmly attached to the periosteum of the sharp ridge of the right temporal bone. The chiasm was softened and swollen, as were also the optic nerves and tracts. "The second, third, fourth, fifth, sixth, and seventh nerves of the right side, and the second and third of the left," were also involved. The author says that the tumor probably originated in the periosteum of the right petrosa, causing neuralgia of the trigeminus and interfering with hearing on this side for months before, by its spread, it surrounded and pressed upon the optic nerves at their exit from the cranium. When conduction was thus cut off, instead of the usual appearances of choked disks or descending neuritis, there was only gray haze of the head of the nerve and the surrounding retina, such as we might expect after division of the nerves by some instrument.

The *symptom of rotation of the head and conjugate deviation of the eyes in various cerebral lesions* is exhaustively studied by Picot.<sup>70</sup>  
June 15; July 20; Sept. 14, 28; Oct. 5, 12, 19 in a series of clinical papers. After citing numerous cases to show this symptom may be produced by lesions in various parts of the cortex, centrum ovale, internal capsule,

## RIGHT.

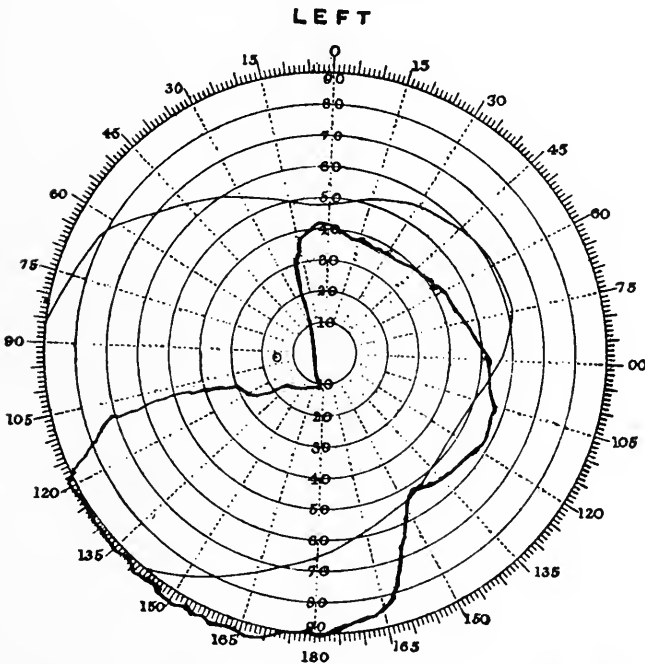
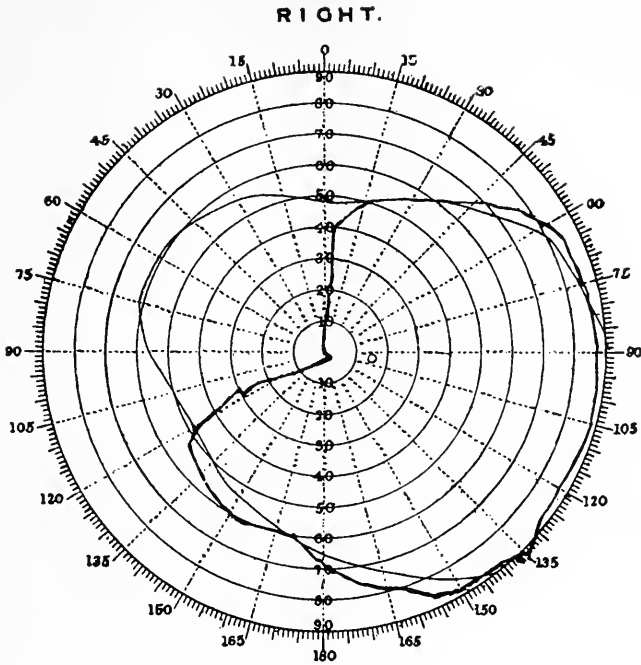


## LEFT.



PERIMETER CHARTS. NORRIS'S CASE OF BRAIN-TUMOR. CASE I, FEB. 22, 1889.  
(*Transactions American Ophthalmological Society.*)





PERIMETER CHARTS. NORRIS'S CASE OF BRAIN-TUMOR. CASE I, MARCH 23, 1889.  
(*Transactions American Ophthalmological Society.*)

external capsule, cerebral peduncles, and upper part of the pons, as well as by lesions of the medulla and middle and lower parts of the pons, he accepts the law formulated by Grasset and Landouzy, that, "in destructive lesions of the cerebro-peduncular portions of the brain, the deviation of the head and eyes, when present, is toward the lesion and away from the paralysis." In case of irritative lesions of the same areas he agrees with these authors that "the deviation is toward the paralysis or convulsions and away from the anatomical lesion." On the other hand, when the disease, destructive or irritative, is confined to the bulbo-protuberantial region, he believes his observations warrant the conclusion that the deviation of the head and eyes is in the direction opposite to that formulated in the above laws. Several diagrams illustrate the mechanism of the ocular and cephalic deviations under these various conditions.

One of the most commendable contributions of the year is August Dufour's <sup>171</sup><sub>Mar., Apr.</sub> article on the "*nuclear paralyses of the ocular muscles*," which may be said to be a supplement to Mauthner's elaborate work. While it is here impossible to analyze his results, attention should be called to his proposed changes in the terminology of ocular paralyses. He suggests the terms "exterior" and "interior" to designate respectively the extra-ocular and intra-ocular muscles, in place of the present ambiguous "external" and "internal." By the term "complete" he would indicate involvement of all of the exterior or interior muscles, unilateral or bilateral; while the term "mixed" is to be used when the paralysis involves both interior and exterior muscles, whether complete or incomplete. For example, his term "*ophtalmoplégie mixte unilatérale incomplète*" would indicate a paralysis on one side of some exterior and interior muscles innervated by different nerves; if all the muscles of one eye were affected this condition would be expressed by changing "*incomplète*" to "*complète*" in the above expression. These suggestions are worthy of adoption. A peculiar case of recurring nuclear paralysis of the oculo-motor nerve is described by Pel <sup>4</sup><sub>Jan., 6</sub> in the person of a man 32 years old. Within a period of two years there were seven recurrences of paralysis, all of short duration except the last, which had remained permanent from October 23, 1889, up to the time of reporting. The case was one of ophthalmoplegia exterior, and is considered

to stand in connection of effect to cause with tabes dorsalis preceding and co-existing. The limited extent and unilateral site, in spite of the long duration of the affection (eight years' tabetic, two years' oculo-motor symptoms), he considers as extremely peculiar. The author concludes that pure and simple recurring paralysis of the oculo-motor nerve can be nuclear in origin, and that such a recurring paralysis may appear as the principal symptom in the first stage of tabes dorsalis.

From an analysis of the *motor symptoms and conditions of the ocular apparatus, as observed in imbecility, epilepsy and the second stage of general paralysis of the insane*, Oliver<sup>5 Nov.</sup> concludes: "1. In idiopathic epilepsy of the male adult, even where the stage of dementia has been reached, both the intra-ocular and the extra-ocular motor-groupings seemingly, as a rule, remain unimpaired both as to innervation and to active impulse, although in some instances curious enervations and limitations of action seem to exist. 2. In the lower grades of imbecility, as seen in the male adult, which have resulted from malformation or disease of a minor degree than that producing so-called idiocy, that have supervened in infancy or occurred before birth, both the intra-ocular and the extra-ocular muscle-groupings, as a rule, remain unaffected both as to innervation and as to proper action; in fact, they seem ordinarily to retain their original condition without any pronounced indications of wear and tear,—a condition that most probably evidences very little abuse of a delicately-poised muscular apparatus. 3. In the second stage of paresis, as seen in the male, both the intra-ocular and the extra-ocular motor-groupings are in all instances more or less paretic, as evidenced by inequalities and irregularities of pupillary areas, with peculiarities in iritic movement and loss in ciliary tone and power, as well as by extra-ocular insufficiencies and ataxic nystagmic motions,—all indicative of imperfect muscle innervation and inadequate muscle-action."

E. J. Brown<sup>850 Oct. 15</sup> reports a case of *recovery from left lateral hemianopsia dependent upon cerebral syphilis*.

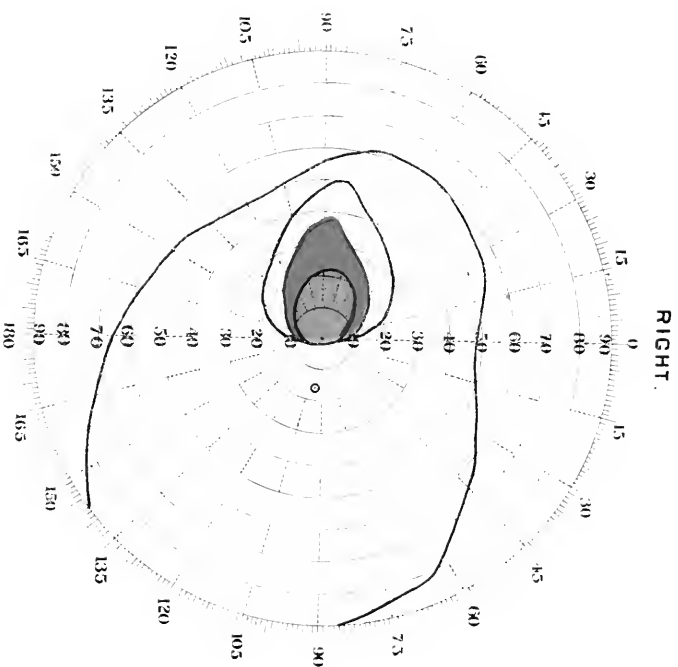
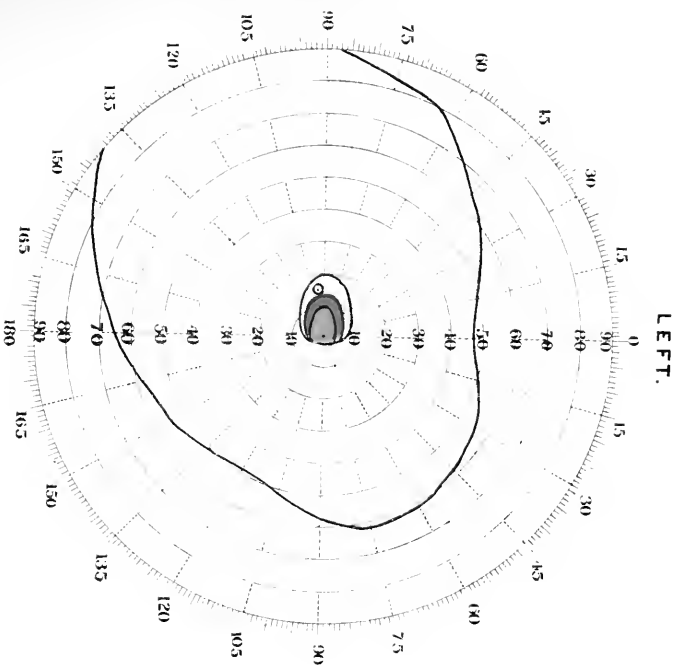
Jaesche<sup>21 Apr. 7</sup> reports some interesting cases of *amblyopia of central origin*. Jansen<sup>21 Apr. 7</sup> adds a case to the literature of homonymous or symmetrical hemianopsia, which, on account of its peculiar phenomena, leads him to assume with Ferrier the existence of a second centre for vision in the gyrus angularis. A case of so-called basal

hemianopsia reported by Remak<sup>75</sup> is of interest on account of its clinical history. After scarlet fever right-sided ptosis and insufficiency of the superior rectus developed, both being considered due to peripheral paralysis. Later, homonymous hemianopsia developed and crossed spastic paralysis of the lower extremity appeared, making the diagnosis clear. Intellectual deficiency with headache had long before been noted. It is remarkable that so excellent an authority as Uhthoff could not detect Wernicke's hemiopic pupillary reaction in this case. The course of the affection before the full development of characteristic diagnostic signs extended over six years.

A case of *alexia (dysnagnosia)*, occurring in an 82-year-old man, is reported by Burnett.<sup>249</sup> The absence of pathological changes to account for the inability of the patient to distinguish even the largest of test-types led to its detection. The attack followed a general convulsive seizure, attended by unconsciousness, lasting three days. This condition of the reading faculty still persisted at the time of the patient's death, seventeen months later. No other faculty (so far as the closest scrutiny and most careful examination could discover) was affected; this fact, the author says, "would seem to demonstrate conclusively the existence of a 'reading centre' separate and distinct from any and all other centres." No autopsy was obtained.

Oliver<sup>59</sup> gives the notes of a case of *intra-cranial neoplasm with localizing eye symptoms*, seen with Dercum. When first seen there was right lateral homonymous hemianopsia, the left field being the smaller (as shown in the adjoining chromo-lithograph). In the remaining fields there were floating scotomata for green, with sub-normal color perception more pronounced on the left side. The "Wernicke hemiopic pupillary reaction sign" was well marked. In the right eye the ophthalmoscope showed a broad, superficial, blotch-like hæmorrhage, extending over the lower outer quadrant of the disk, with enlargement and tortuosity of the retinal veins and arteries.

These ophthalmic signs, in association with a right hemi-æsthesia and hemiplegia, caused a diagnosis of a gross intra-cranial lesion near or in the left optic thalamus to be made. Four weeks later the autopsy showed a gliosarcoma involving the external portion of the left optic thalamus as well as the corpus striatum,



Perimeter Charts (Oliver)

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almost as far as its anterior third. The left optic tract as far forward as the optic chiasm was markedly flattened and pressed upon.

Tilley<sup>61</sup><sub>Oct.11</sub> reports a case of left lateral homonymous hemianopsia in a man 21 years of age, who had received a wound in the occipito-parietal region. The scar was situated  $4\frac{1}{2}$  inches forward from the occipital protuberance and  $\frac{5}{8}$  inch to the right of the median line. The left pupil was slightly the larger, but no gross changes were visible in the fundus. The Wernicke sign was not present. The patient complained of a noise in the left side of the head. No history of syphilis could be obtained, but under mercurial treatment the differences in the pupils disappeared and the noise in the head became less troublesome, although no changes occurred in the visual fields.

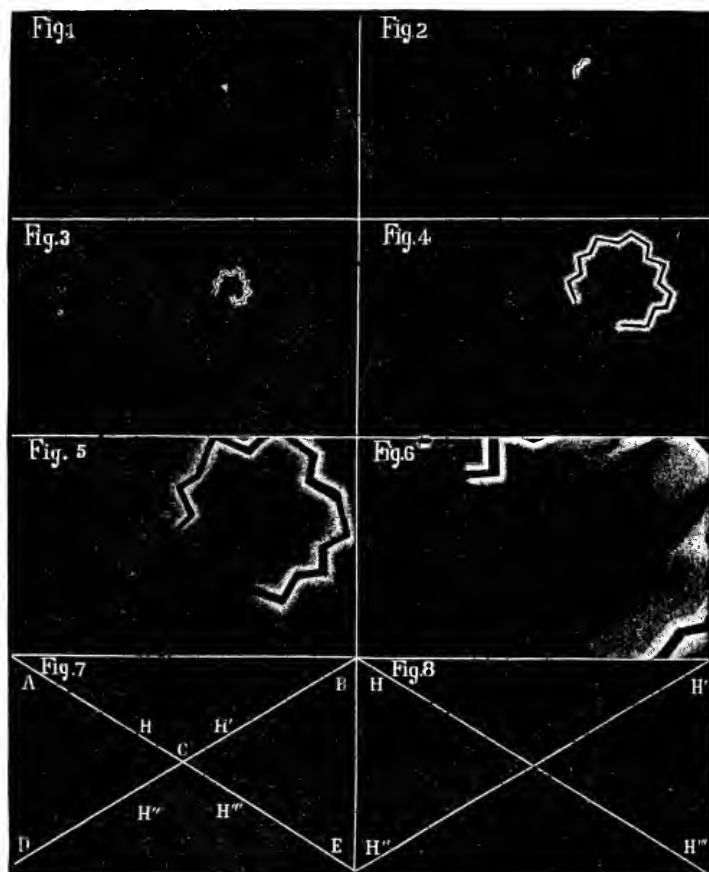
From a clinical study and the autopsy of a case of glioma beginning in the left posterior quadrigeminal tubercle, and producing, among other symptoms, nasal hemianopsia of the left eye with complete blindness of the right, Ruel<sup>31</sup><sub>July 30</sub> establishes a new regional diagnosis as follows: "The existence of lateral homonymous hemianopsia and simultaneous crossed unilateral blindness, without ophthalmoscopic changes, is the result of a lesion of the internal and external geniculate bodies and of the corresponding suboptic region."

A graphic description of the *appearance of a scintillating scotoma* is given by a patient of Javal.<sup>173</sup><sub>July</sub> The phenomenon was observed at irregular intervals, but always followed a definite course. An attack was preceded by slight headache and disturbance of vision, necessitating cessation of work. Upon closing the eyes the patient could observe in the obscurity (as shown in the sketch on the next page) a point of light, which, gradually enlarging, presented the form of a luminous broken line curved upon itself like a horse-shoe. This figure enlarged itself constantly until it passed out of the field of view. The duration of these curious attacks varied from half an hour to two hours.

Charcot<sup>73</sup><sub>Aug.2,9</sub> adds a new case of *ophthalmoplegic migraine* to the list of 19 previously reported by various writers. He discusses at length the clinical features of the case, and advocates the prolonged administration of bromide of potassium.

Cheney<sup>99</sup><sub>Feb.20</sub> properly says that, in forming conclusions as to

the value of *ocular treatment in chorea*, the fact that patients frequently recover while undergoing no treatment whatever must be taken into consideration. From "*an analysis of the ocular symptoms found in the third stage of general paralysis of the insane*," Oliver<sup>9</sup><sub>Sept. 20</sub> concludes: "1. The oculo-motor symptoms of the third stage of general paralysis of the insane—which consist



JAVAL'S CASE OF SCINTILLATING SCOTOMA.  
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in varying though marked degrees of loss and enfeeblement of iris response to light stimulus; accommodative effort and converging power; lessening of ciliary-muscle tone and action; weakening and inefficiency of extra-ocular muscle motion—all show paretic and paralytic disturbances connected with the oculo-motor apparatus itself, of greater amount and more serious consequences than those



seen in the same apparatus during the second stage of the disease. 2. The sensory changes of the third stage of general paralysis of the insane—which, though similar to those found in the second stage of the disorder, are so pronounced as to show a semi-atrophic condition of the optic nerve-head and marked reduction in the amount of both optic-nerve and retinal circulation, with consequent lowering of centric and excentric vision for both form and color—all indicate a degenerate condition of the sensory portion of the ocular apparatus, with impairment of sensory nerve action. 3. The peculiar local changes seen in these cases—which consist in conditions of the choroid and retina indicative of local disturbance and irritation of these tunics, more pronounced than those seen during the second stage of the disease—all represent the results of greater wear and tear given to a more delicate and more weakened organ. 4. Both the motor symptoms and the sensory changes of the ocular apparatus, as thus described in the advanced or third stage of general paralysis of the insane, furnish not only evidence of a local disturbance of a more pronounced type than those shown in the second stage of the disorder, but plainly show themselves as one of the many peripheral expressions of fast-approaching degeneration and dissolution of nerve-elements, most probably connected with related cortex disintegration and death."

In a further study of the *functional disturbances of sight in amblyopia*, Treitel<sup>204</sup><sub>Oct</sub> comes to conclusions which he embodies in the following sentences: "A diminution in the sensitiveness of the central portion of the retina, regarding perception of objects of certain colors and forms on a background of a certain color of known intensity, can be observed in opacities of the refracting media in all diseases of the fundus and in affections of the optic nerve. It is therefore no sign of distinct forms of amblyopia, but simply a symptom of reduced functional power, of the same significance as reduction of visual acuity and of quantitative color perception."

A case of *hysterical blindness* of ten years' duration, which manifested itself after a blow on the eye, has been seen by G. Harlan.<sup>9</sup><sub>Jan. 11</sub> The patient was a healthy man 21 years of age. Upon excluding the fellow-eye by placing a plus spherical 4 D. in front of it, the patient was found to have a vision of  $\frac{2}{5}$ .

Covert<sup>776</sup><sub>Apr.</sub> notes a case of convulsions in childhood, another of hystero-epilepsy and a third of insomnia, all said to be cured by the correction of existing errors of refraction and muscular insufficiencies. Leplat<sup>293</sup><sub>Oct.</sub> gives the histories of 2 cases of sudden amblyopia in a boy and a girl, each 12 years old, which were cured by a simple placebo and the suggestion that the trouble would pass away in eight days. A case of hysterical blepharospasm in a woman 40 years of age is recorded by A. D. Williams.<sup>109</sup><sub>July</sub> The condition was entirely relieved by the instillation of cocaine. Ritzmann<sup>214</sup><sub>Feb.1</sub> reports 2 cases of obstinate functional disorders, one an hysterical blepharospasm, the other a so-called "anæsthesia of the retina," in which, after failure with other methods of treatment, "the psychodynamic action of hypnotic suggestion" removed the troubles completely in a surprisingly short time. The author has not yet reported as to the permanency of the cure.

Adamük<sup>254</sup><sub>Aug.</sub> reports a case of *amaurosis transitoria with myosis*. He believes that these cases are caused by intra-cranial vasomotor spasm, and probably are to be classed among the hysterical affections. The prognosis in cases of amaurosis, associated with myosis, he says, seems, therefore, to be favorable, the affection generally yielding promptly to atropine.

Two cases of hysterical amblyopia occurring in married women have been seen by Campbell.<sup>776</sup><sub>July</sub> In both instances there was well-marked photophobia and irritability of the affected eye. Ophthalmoscopic examination showed contraction of the retinal arteries, but no gross changes. The first patient suffered from an anterior flexion of the uterus, after correction of which recovery was rapid. In the second case recovery took place after treatment of an existing ovarian trouble, but in six months' time there was a return of the previous eye symptoms, which again rapidly improved under massage and galvanism.

From the *study of the optic nerves* of a woman 32 years of age, who was probably addicted to the use of *tobacco*, and in whom post-mortem examination showed a condition of *chronic alcoholism*, Turner<sup>277</sup><sub>July</sub> concludes that "the change produced by alcohol and tobacco on the optic nerve is an interstitial neuritis leading to inflammation and secondary degeneration of the nerve-fibres; and the neuritis has been shown to attack the strand of fibres which supply the papillo-macular region of the fundus oculi." Failing

to find retinal changes in a case of leucocythæmia, but noting a "typical tobacco papilla," Gould<sup>112</sup><sub>Dec., '99</sub> propounds the query, "May the toxic action of the tobacco stand in some causal relation to the absence of the usual leucocythæmic, retinal lesion?"

Éperon<sup>197</sup><sub>Aug. 20</sub> calls attention to the rather frequent occurrence of many of the important symptoms of tabes in cases of toxic amblyopia (tobacco or alcohol). Out of 65 cases observed, 11 have shown one or more characteristic symptoms as follows: The Argyll Robertson pupil, 3 cases; myosis, 1 case; abolition or marked diminution of the knee-jerk, 9 cases; lightning pains, 6 cases; the symptom of Romberg, 1 case. As regards the correctness of diagnosis, the author was enabled to keep 7 of these patients under observation for periods varying from several months to several years, and was able to record either a complete cure, marked improvement, or stationary condition of the amblyopia, which, he observes, would not have been the case in true tabes dorsalis. One instance which he details presented, as tabetiform symptoms, lightning pains, the girdle sensation, the Argyll Robertson pupil, total abolition of knee-jerk on the right side, with marked diminution on the left. Although he states that notable amelioration in vision followed treatment addressed to the toxic condition, yet the author fails to tell us whether there was either any subsidence of the other symptoms, or whether there had ever been any central scotoma. In spite of this he most properly relies upon the presence of central scotoma, with integrity of the peripheral visual field, as the most valuable symptom in differential diagnosis in favor of toxic amblyopia.

In a careful study of tobacco amblyopia, Connor<sup>61</sup><sub>Feb. 15</sub> propounds the following questions, upon which more light is desired: 1. What influence has alcohol upon the causation of central amblyopia? 2. Is it necessary to entirely suspend the use of tobacco in order to effect a cure of tobacco amblyopia? 3. Does tobacco produce atrophy of the optic disk? 4. What relationship, if any, exists between tobacco amblyopia and retrobulbar neuritis? 5. What relationship exists between diabetes and tobacco amblyopia? He has endeavored to show that: "1. Tobacco has an especial affinity for a central tract in the optic nerves, and may induce central amblyopia. 2. No other single agent has been shown to induce central amblyopia symmetrical in both eyes in strictly non-

users of tobacco. 3. Some special condition or conditions are required to precipitate an attack, as abuse of alcohol, diabetes, excessive venery, starvation, mental shock, or distress, etc. 4. Some individuals seem to have an especial tendency to optic-nerve degeneration, and to these the use of tobacco is especially injurious. 5. Clinically, central amblyopia is recognized by its sudden development, by the existence of central scotoma for color in both eyes without limitation of the fields of vision, by the absence of any defect of refraction or recognizable lesion to account for the sudden blindness, and by its occurrence only in tobacco-smokers. 6. Pathologically, during at least its earlier stages, it consists of an anæmia of the central portions of the optic nerves. Possibly this may, after a longer or shorter time, induce organic disease, but this has not yet been shown in a case of pure tobacco amblyopia. Its prognosis is good, during the earlier stages at least, if properly managed. 7. Its treatment consists principally in withdrawing the tobacco. Other measures may be profitably employed that promote the local nutrition of the eye and the system in general."

As the result of the examination of some cases of inflammation and atrophy of the optic nerve with special reference to etiology and prognosis, Thompson<sup>61</sup><sub>Dec. 29, '90</sub> arrives at the following conclusions: 1. Progressive atrophy, with no evidences of former inflammation, rarely gives any clue to its etiology. In such cases the prognosis is that vision rarely improves. If it occurs in but one eye, which quickly becomes blind, and, after an interval of several months, no sign of failure in the acuity of vision takes place, then the prognosis is favorable as to the second eye. 2. In atrophies of the nerve following pernicious intermittent fever, though vision has been almost *nil* for years, it often improves very much when least expected. 3. Inflammations of the optic nerve resulting from violent exercise, disturbances in menstruation, etc., occurring in plethoric persons, admit of a very favorable prognosis. 4. Atrophies occurring in very anæmic patients usually permanently impair or destroy vision. 5. Where inflammation of the nerve is caused by meningitis, and that is of syphilitic origin, the prognosis is highly favorable, but when said meningitis is of other origin the prognosis is gloomy as to sight and life. 6. Inflammations of the optic disk caused by brain-tumors often change so in appearance, and such improvement takes place in the patient,

owing to subsidence of meningeal inflammation, effusion, and other modifying causes, that one is liable in some cases to doubt the correctness of his diagnosis or to modify his views as to the prognosis; but death is the result, with few exceptions. 7. Inflammation of the optic nerve and retina occurring in the course of Bright's disease means death in from one month to two years. I have seen many cases, and none have survived the last-mentioned period except pregnant women; some of these have died. One (in whom premature labor was brought on) has perfect vision and one where it was not produced is stone-blind. 8. Atrophy of the optic nerve following long-continued abuse of alcohol and tobacco combined calls for an unfavorable prognosis as regards vision. But where those poisons are given up before atrophy sets in, even though the sight is but  $\frac{1}{2} \frac{0}{0}$ , perfect restoration of vision usually takes place, not by the "tapering-off" method, but by the sudden discontinuance. 9. Atrophy occurring during the process of retinitis pigmentosa, either congenital or acquired, offers nothing favorable as to prognosis.

Uthoff<sup>4</sup><sub>July 14</sub> finds alcoholism to be an important etiological factor in hemeralopia and xerosis conjunctivæ.

Another case of complete *amaurosis, following the ingestion* of 225 grains of *quinine*, is recorded by Garofolo.<sup>650</sup><sub>No. 16</sub> He says he believes that some other cause than disturbances in retinal circulation was co-operative in producing the accident. A case of amblyopia from frequent inhalations of the vapors of bisulphide of carbon is reported by Gallemaerts.<sup>276</sup><sub>July 20</sub> The fields of vision which are appended to the article show both contraction and perversion, with large central scotomata. Ophthalmoscopic examination resulted negatively. He deems it impossible to determine the exact point of lesion.

Grünthal<sup>190</sup><sub>Mar.</sub> reports a case of poisoning by *hydracetic*. Two weeks later two small retinal hæmorrhages in the left eye, with a small absolute scotoma, was observed. Spontaneous absorption of the blood was complete in four weeks. Since hydracetic, according to Guttman's investigations, produces a destruction of the red blood-globules, the author thinks the hæmorrhages in his case can be compared, in their pathology, to those of pernicious anæmia and scorbutus. In a report of 5 cases of paralysis of accommodation from ptomaine poisoning, Groenouw<sup>353</sup><sub>May</sub> compares this condition

with the same phenomenon as produced by diphtheritic virus and atropine. He believes that, in small dose, the ptomaine produces only a paresis of accommodation, with the addition of paresis of the sphincter iridis if given in large doses; while the diphtheritic poison rarely causes mydriasis, and atropine, at the beginning or end of its action, produces mydriasis with little or no paralysis of accommodation. He believes that these observations may prove of some value in differential diagnosis.

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## SECTION V.

### THERAPEUTICS AND INSTRUMENTS.

Nieden<sup>190</sup><sub>Dec., '89</sub> recommends *Rotter's antiseptic pastilles*, which he has used and found safe and efficient. Von Baeyer's analysis shows that the ingredients of the formula are not incompatible; and experimental proof, he asserts, places its efficiency equal to 1-to-1000 corrosive-sublimate solution. The cheapness of the preparation, he believes, is also an item in favor of its general adoption.

On the other hand, Eversbusch<sup>190</sup><sub>Mar.</sub> is decidedly in favor of a weak sublimate solution in preference to Rotter's pastilles. While in cases in which he has used the latter antiseptic pericorneal injection was not produced, yet the corneal wound after cataract extraction, he states, did not close until the fourth to sixth day. With sublimate solution, in his experience, union has always followed two days after the operation. Bacteriological investigations, made at his suggestion by Fromm, seemed to show that Rotter's solution, in the strength of 1 pastille to  $\frac{1}{4}$  litre ( $\frac{1}{2}$  pint), never acted in less than seventeen minutes; that the time of action was very uncertain; and that with a solution of double the strength mentioned eleven minutes were required to destroy cocci. Despite these criticisms, Nieden<sup>190</sup><sub>Aug.</sub> re-asserts his previous opinion, and gives the clinical history of 6 cases of more or less grave traumatism in which he obtained very good results from this antiseptic.

Kroll<sup>4</sup><sub>Mar. 3</sub> speaks of the good effects of solution of *bichloride of mercury* in *erysipelas* and *eczema of the lids*, and of *iodoform* in *corneal ulcers* and *orbital necrosis*. Serpiginous ulcer of the cornea, which has passed beyond the stage in which complete cauterization is possible, often yields, he asserts, to irrigations of

sublimite solution (1 to 5000), with subsequent dusting of iodoform, repeated every two hours. The good action of nitrate of silver he considers in large part due to its antiseptic action. A case observed by Meurer, Jr., <sup>254</sup><sub>Aug.</sub> demonstrates anew the danger of applying mercurial preparations to the conjunctiva with simultaneous external or internal use of iodine or its salts. The author gives a very delicate test for iodine in the urine.

Eversbusch <sup>190</sup><sub>May</sub> sides with Steffan in considering *perfect operative technique* as the *essential factor for good results in ophthalmic surgery*. He calls it operative antisepsis, since the bacterium finds after it but little soil in which to grow. To insure the possibility of perfect technique in restless patients during extraction of cataract, he advises the use of anæsthetics, and for this purpose he especially recommends æthylbromid, with local employment of cocaine, thus allowing interruption of the narcosis at any moment with continuance of relaxation of the muscular apparatus,—a fact important for the exit of the lens. Although he is convinced of the impossibility of keeping the conjunctival sac perfectly aseptic, he uses and considers useful instillations of bichloride of mercury as diminishing the source of infection. While holding that simple boiled distilled water is sufficient for most aseptic operations, Vacher <sup>173</sup><sub>May</sub> usually prefers to use a decided antiseptic like corrosive sublimate or the double iodide of mercury and soda. His experience with salicylate of mercury has not been sufficiently extended to permit of positive opinion of its value. For instruments he employs boiling followed by immersion in absolute alcohol.

In an article on *cleanliness in eye surgery*, Milliken <sup>347</sup><sub>June</sub> considers the subject under three heads: First, the care of the instruments for operation. For this purpose he prefers swabbing them with absorbent cotton saturated with alcohol, provided they have been thoroughly washed in hot or boiling water after previous use. Second, the care of the organ before and during the operation. The plan pursued by the author has been to thoroughly wash the entire surroundings of the eye with soap and warm water, followed by a free bath of the parts, including the conjunctiva, with a solution of bichloride, 1 to 5000, the roots of the lashes and edge of the lids being scrubbed. If a solution of cocaine is employed, it is made up with the bichloride preparation. Upon completion of the operation, the eye is again cleansed

by flooding the parts with either a bichloride solution or one of boracic acid. Third, the after-treatment. Amongst other rules, he says that keeping cataract or iridectomy cases in bed longer than is sufficient for the edges of the wound to heal well does no good, and may do positive harm. He employs a compress bandage which is not disturbed unless there are contra-indications.

An important study is presented by Stilling, of Strasbourg,<sup>78</sup>  
upon the *antiseptic powers of the aniline colors*. After numerous experiments with methyl violet, fuchsine, methylene blue, rhodamine, auramine, vesuvine, and other anilines, he finds that methyl violet, in solutions of 1 to 2000 up to 1000, exerts a positively destructive influence upon the bacteria of putrefaction and prevents the fermentation of grain. Solutions as weak as 1 to 64,000 prevented the further development of pure cultures of the staphylococcus pyogenes aureus. Next to the violet, auramine proved most powerful. A solution of methyl violet, 1 to 1000, at once deeply stains the conjunctiva and sclerotic, and passing through the healthy cornea, which it does not discolor, it almost immediately tints the iris; but if the cornea be wounded it takes the stain intensely at this point. In man the pupil becomes dilated, but accommodation is not affected. Having made a number of experiments with methyl violet as a local antiseptic in ocular inflammations, he reports very brilliant success. A corneal ulcer in a scrofulous child, which he had treated in the usual way most carefully for more than a month, is said to have been cured by one instillation of a few drops of the aniline solution. A case of early keratitis with hypopyon was cured in one day by the application of an aniline crayon. Again, in such affections as blepharitis, conjunctivitis, phlyctenules, and eczema of the lids, he has employed methyl violet and auramine with a seeming success which the older treatment has never approached. In interstitial keratitis, serous iritis of long standing, disseminated choroiditis, and even grave sympathetic ophthalmia, he has had most prompt and certain results. He recommends an aniline which Merck has introduced under the name of *pyoctanine*, as being free from impurities and possessing the antiseptic powers of the substances he has employed. In a later communication Stilling,<sup>78</sup>  
<sub>June 30</sub> deprecates the hasty and unscientific methods of experiment to which his first publication has led the medical world, and asserts that the subject is yet in its



infancy, needing wide and careful experience to elaborate its technique. For ophthalmic practice he recommends the following preparations: 1. Small crayons for sterilizing ulcerated surfaces of the cornea. 2. Auramine-powder of a strength of 1 to 1000 for slight conjunctival inflammations, or violet-powder, 2 to 100, for graver conditions like blennorrhœa. 3. Ointments varying in strength from 2 to 100 up to 1 to 10. 4. Solutions from 1 to 1000 up to 1 to 100. For slight affections, such as conjunctival catarrh without much suppuration, the yellow substance, auramine, is preferable and more agreeable; it may be used several times daily. Solutions of both the yellow and blue aniline are readily decomposed by exposure to the light, and therefore should be kept in dark bottles and be frequently renewed.

Noguès<sup>173</sup><sub>Aug.</sub> reports that he has tried the anilines, and that they appear to fulfill the conditions of a good antiseptic in all suppurations of the conjunctiva and in all inflammatory affections of the cornea, but that they seem to be less active than some other remedies in the treatment of granulations. In the more serious diseases he has not yet had opportunity of employing this method of treatment.

Gallemaerts,<sup>171</sup><sub>July, Aug.</sub> who has made some experiments with pyocetane, asserts that, while it prevents the growth of the bacillus anthracis and the bacillus pyogenes fœtidus, the bacillus pyocyaneus and the staphylococcus pyogenes aureus multiply as readily after as before exposure, and that the color of the aniline becomes reddened under the action of the two last-named kinds of organism. Upon diseased conditions he has found the best results in corneal ulcers, but in cases of other ophthalmic diseases his findings have been frequently disappointing. Nuel's experience<sup>171</sup><sub>July, Aug.</sub> has been somewhat more favorable. A desperate case of gonorrhœa of the conjunctiva was cured in ten days. In this case, however, he observed a violaceous discoloration of the conjunctiva persisting eight days after the treatment was discontinued, and he is disposed to think it will be permanent.

Alt<sup>347</sup><sub>Oct.</sub> says that his results with pyocetane do not show that it is any better than, or, perhaps, even as good as, the bichloride of mercury, and it is, moreover, a somewhat disagreeable thing to handle, on account of its staining.

Scheffels,<sup>4</sup><sub>July 14</sub> has obtained absolutely negative results in the

treatment of corneal ulcers with pyoctanine. Valude and Vignal<sup>274</sup><sub>Sept., Oct.</sub> believe that, while it is inferior to corrosive sublimate, there are cases in which pyoctanine can act more efficaciously on account of its extraordinary power of penetration.

Wieherkiewicz<sup>274</sup><sub>Nov., Dec., '99</sub> speaks well of the *value of mydriatics or myotics in improving vision in cases of fixed opacities of the refracting media of the eye*. He claims that in central opacities of the cornea and in anterior or posterior capsular cataract much benefit in near vision can be derived from the use of a mydriatic which does not influence accommodation (cocaine, 3 per cent.). In cases of high myopia with central opacities he prefers to practice a careful iridectomy for artificial pupil. He says, on the other hand, when the opacities are peripheral, as in many incipient cataracts, in aphakia with capsular or cortical remains, in some corneal opacities, and in luxations of the crystalline producing diplopia, a myotic like pilocarpine ( $\frac{1}{2}$  to 1 per cent.) often produces marked benefit.

The experiments of Gley, which showed that *ouabaine* and *strophantine* possessed an anæsthetic power over the conjunctivæ of certain animals, have been confirmed by Panas.<sup>173</sup><sub>Mar.</sub> He has, moreover, tried both of these drugs in the human eye, and has found that ouabaine, while unirritating, is not anæsthetic, and that strophantine causes anæsthesia, with great irritation.

Macbride<sup>77</sup><sub>Oct.</sub> says that the *hydrobromide of hyoscyamine* appears to be the most powerful of all the mydriatics. He finds that one instillation will do "as well as repeated instillations of atropine sulphate, and, instead of requiring from ten days to three weeks to pass off, the effects pass off in five days at the longest."

According to Franke,<sup>78</sup><sub>Aug. 31</sub> *solutions of cocaine and atropine* can be kept sterile by the daily addition of a few drops of strong sublimate solution, so that these alkaloids are kept constantly in a solution of sublimate of a strength of 1 to 10.000; the bottles should be frequently cleansed by mechanical means. He claims that eserine solutions made with boiled water will remain sterile with sublimate 1 to 1000.

For the treatment of atrophies of the optic nerve, Max Weiss<sup>169</sup><sub>Jan.</sub> describes a peculiar method of electrotherapy, with which he has had gratifying results. He details a case of double optic-nerve atrophy, more marked in the right eye, which was doubtless of syphilitic origin. After one hundred and forty days of treat-

ment, he reports "a normal ophthalmoscopic picture with normal vision" in the left eye, while vision in the right had risen from 0 to  $\frac{2}{20}$ . Whether constitutional treatment was used in addition to electricity the author fails to report.

Cheatham,<sup>61</sup><sub>June 28</sub> prefers the use of powdered *jequirity* to an infusion of the drug. The author says that he knows of "no condition in which there is pannus, unless it be a large slough of the cornea, with or without prolapse of the iris," in which he would "hesitate to use the pulverized *jequirity*, provided the usual remedies had failed."

After giving a short history of *ocular massage* as practiced by the ancient Greeks, Costomiris,<sup>274</sup><sub>Jan., Feb.</sub> furnishes us with an exhaustive account of its application in both chronic and acute types of some of the superficial diseases, as well as in some of those in the deeper tissues of the anterior segment of the globe, together with a short description of additional methods of treatment. He cites several clinical examples of the value of massage as a therapeutic treatment.

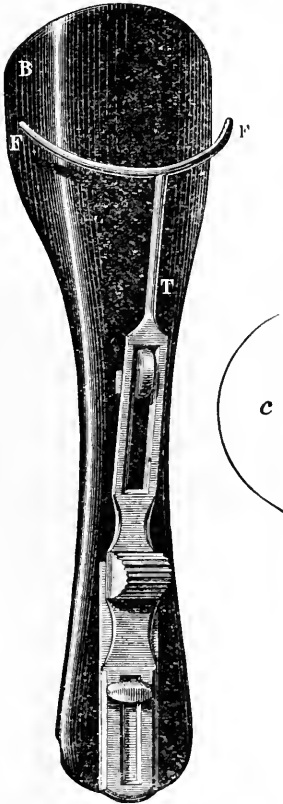
*In detachment of the retina*, Abadie,<sup>171</sup><sub>Oct.-Dec., '99</sub> claims to have had better results by *injection* of a solution composed of *iodide of potassium* 1 part, *with tincture of iodine* and distilled water, each 20 parts, than he previously obtained by using the simple tincture, according to the method of Schöler; 1 to 1½ drops of this solution are injected. Later he<sup>173</sup><sub>May</sub> has simplified his method by substituting for the von Graefe knife an instrument resembling it in general design, but having in addition a canula in the back of the blade in connection with a Pravaz syringe, which forms the handle of the apparatus. By this means he is enabled to make his puncture and injection with a single instrument. If the detachment is large he makes an injection at each extremity. Despagne<sup>173</sup><sub>May</sub> proposes aspiration of the subretinal effusion, followed by the injection of a drop of 1-to-2000 sublimate solution, which he thinks is a safer agent. Chibret<sup>173</sup><sub>May</sub> regards many cases as rheumatic in origin, and proposes long-continued treatment with salicylate of sodium. Locally, he has tried the injection of a 1-to-1500 solution of oxy-cyanide of mercury without success. Landolt, corresponding editor at Paris, France,<sup>173</sup><sub>May</sub> relies upon a simple puncture of the sclerotic.

Abadie<sup>173</sup><sub>Mar.</sub> states that he has found grave syphilitic disease of the eye, which resisted the internal administration of mercury, yield promptly to the subcutaneous injection of the bichloride.

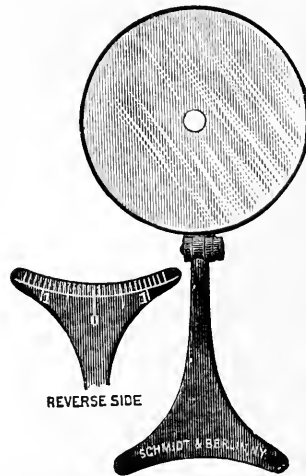
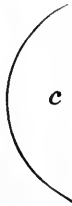
Jackson<sup>9</sup><sub>Feb.15</sub> has designed a pair of spring-handled tenotomy scissors so constructed as to overcome the difficulty of bringing the hand in proper position in order to secure good control of the instrument.

A new form of eyelid-retractor, arranged so as to be used by a finger and thumb, has been devised by McGillivray.<sup>2</sup><sub>June 14</sub> This year we are enabled to give a graphic representation of Landolt's palpebral plaque.<sup>274</sup><sub>Jan.,Feb.</sub> As can be seen, it presents the double advantage of acting as a complete hæmostat and offering to the surgeon an extremely large operative field.

Gradle<sup>78</sup><sub>Aug.31</sub> describes an apparatus which he has constructed for determining latent strabismus. He



LANDOLT'S PALPEBRAL PLAQUE.  
(*Archives d'Ophthalmologie.*)



CLAIBORNE'S RETINOSCOPE AND STRABIS-  
MOMETER.  
(*New York Medical Journal.*)

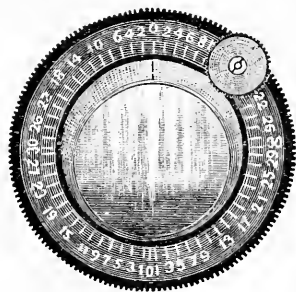
properly asserts that divergence as great as  $1^{\circ}$  or  $2^{\circ}$  can exist without inconvenience to the patient.

The accompanying cut represents a retinoscope and strabismometer devised by Claiborne.<sup>1</sup><sub>Oct.25</sub> The mirror is plane and has a diameter of  $1\frac{3}{4}$  inches. The scale, which is  $1\frac{1}{4}$  inches wide, is capable of measuring deviations of  $\frac{5}{8}$  inch.

Stevens<sup>59</sup><sub>Jan.25</sub> describes a new *slide with rotating prisms* for his

phorometer. The accompanying cut represents a convenient form of *revolving prisms* designed by Risley.<sup>9 Dec. 21, '89</sup> The author says that he has found great advantage from the use of the instrument in conjunction with the Maddox double prism.

De Wecker and Masselon<sup>171 Sept., Oct.</sup> offer two simple instruments, one intended to estimate the difference between the pupils in near and distant vision, the other to measure the bitemporal diameter and position of the ears. A new model of *perimeter* has been introduced by Lapersonne.<sup>171 Jan., Feb.</sup> It consists essentially of an arc of a little more than  $90^\circ$ , having a radius of 12 inches and a breadth on the flat of  $2\frac{1}{2}$  inches, and is fixed by a pivot at the zero-point to an upright post. By revolution about this pivot it describes a hemisphere, and by being set in varied positions it represents any desired meridian. Upon the inner surface of this arc travels a stage presenting an aperture 1 centimetre square, the size of which can be decreased symmetrically down to complete closure. This stage contains within it a disk carrying six colored circles, white, red, green, yellow, blue, and violet, which can be brought successively before the opened aperture. A chin-rest completes the apparatus. A new *instrument for measuring the curvature of the crystalline lens* has been devised



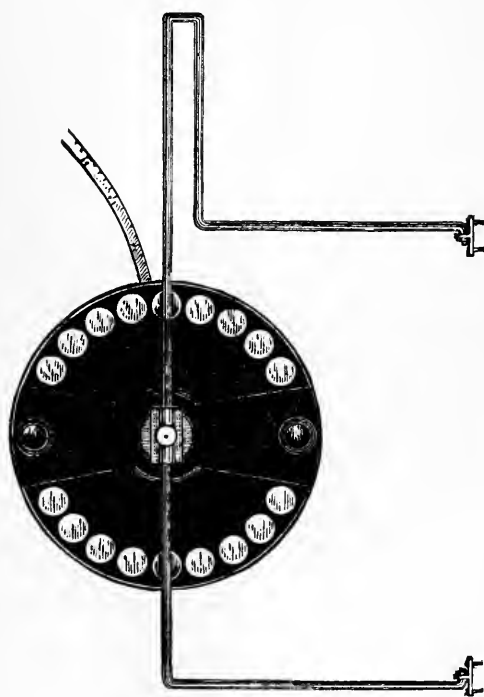
RISLEY'S REVOLVING PRISMS.  
(*Medical News.*)

by Tscherning.<sup>173 May</sup> It resembles the ophthalmometer of Javal and Schiötz, and consists of an arc upon which move three standards, one bearing a strong incandescent lamp, the second carrying a long rod, perpendicular to the plane of the arc and provided with a weak lamp, and a third holding a long rod with a fixation mark upon it. Examination by the instrument has shown that very often the crystalline lens seems to have undergone more or less marked rotation upon its vertical axis, which is independent of any corneal astigmatism.

A *keratoscope* has been devised by Du Bois-Reymond.<sup>190 Sept.</sup> It has the advantage that mechanical appliances allow of focusing and reading off the exact measures, which, by Placido's instrument, can only be approximately determined.

Burnett<sup>249 Apr., July</sup> has devised an apparatus for the ready employ-

ment of *skiascopy*. The author describes it as consisting of a hard-rubber disk containing twenty-three lenses in its periphery, ten convex and thirteen concave. The disk is made movable on a brass rod attached at each end to two other rods, which turn on pivots fastened to a board which can be attached to the wall. This arrangement enables the disk to be placed at any height by means of a screw, and to be turned and retained in any desired position. A clip for carrying a supplementary lens is also supplied. A graduated tape-



WÜRDEMAN'S MODIFICATION OF BURNETT'S  
SKIASCOPE.  
(*American Journal of Ophthalmology.*)

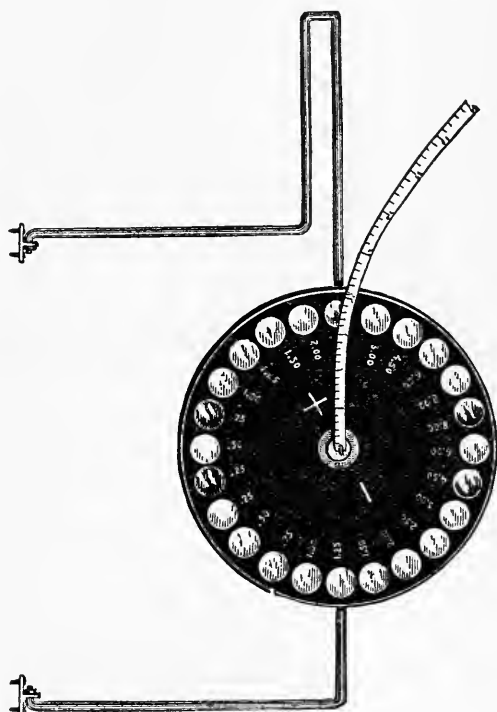
measure is attached to the disk to enable the observer to measure the exact distance from the eye under examination. The author claims for the device that it is less cumbersome, more easily manipulated, and much less expensive than any other previously devised similar instrument. To facilitate the estimation of errors of refraction by skiascopy, Würdemann<sup>317</sup><sub>May</sub> has had constructed a most useful modification of the apparatus designed by Burnett. He employs  $+ .75$  D. as his standard for measurement, which neutralizes the movement, thus making it, he claims, a much more accurate instrument

than any other. The form and mechanism of the contrivance can be well understood from the accompanying wood-cuts.

A pocket *optometer* has been contrived by Chibret,<sup>173</sup><sub>Feb.</sub> so arranged that by mounting four convex and four concave glasses (1, 2, 4, and 8 D.) in a frame the lenses of each series shall be made to superimpose in regular order. He is thus able to form a very handy set of lenses, concave or convex, from 1 to 15 dioptries, which can be readily combined without the necessity of the surgeon's observing the instrument.

Berger,<sup>171</sup><sub>July, Aug.</sub> proposes an *apparatus* “destined to replace the box of trial-glasses.” It consists of two long wooden frames, one of which glides upon the other, like the lid of a box. Each is furnished with six lenses, plano-concave, or -convex, so arranged that the plane surfaces of lenses in each frame can be brought closely in apposition with those in the other frame. The posterior frame contains the lenses 0, +1, +2, +3, -3, -2, -1 D., while the anterior carries +0.50, +7, +14, -21, -14, -7 D. By superposition of the various lenses in the two frames combinations of all plus lenses up to 17 D. and minus lenses up to -24 D., with half dioptres up to +3½ D. and -2½ D., can be readily made. The wood-cut on the next page shows the construction of the apparatus.

Leplat,<sup>274</sup><sub>Jan., Feb.</sub> has invented a so-called *aximeter* for testing the axes of cylindrical lenses. It consists essentially of a graduated ring, within which revolves a smaller one, carrying a stage to support the glass to be examined and an index hand which traverses the outer circle, as shown in the cut. Its operation depends upon the fact that a



WÜRDEMANN'S MODIFICATION OF BURNETT'S  
SKIASCOPE.

(*American Journal of Ophthalmology.*)

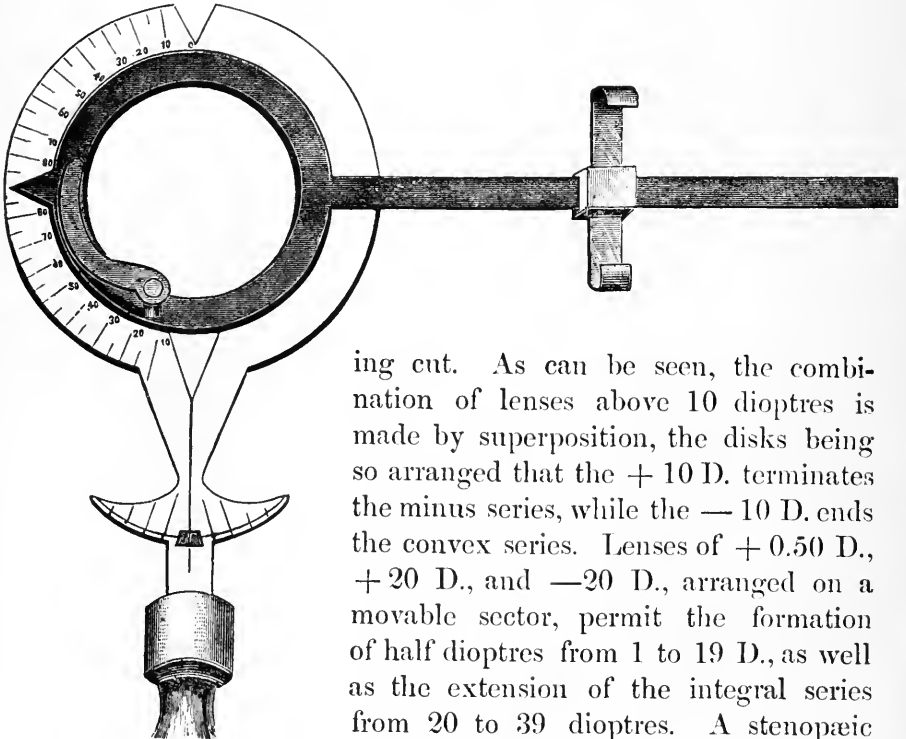
vertical line, viewed in part through a cylindrical glass, is bent or broken except when the axis is vertical or horizontal. With a concave cylinder the refracted line follows the movement of the glass when the axis is vertical, but moves in the opposite direction when the axis is horizontal. The rule for convex cylinders is the reverse of this. In an ophthalmoscope devised by Payne,<sup>1</sup><sub>Aug. 2</sub> two lens-carrying disks are employed, one containing seventeen convex and the other seventeen concave

lenses, so varying in strength that by combining the opposed lenses a series of from 0.25 D. to 11 D., differing 0.25 D. in power, is obtained. The disks are revolved by means of a pair of cog-wheels.



BERGER'S APPARATUS FOR TRIAL-GLASSES.  
(*Annales d'Oculistique.*)

Another *refracting ophthalmoscope*, which can also serve as an optometer, is given to the ophthalmic world, this time by Knoopf. <sup>184</sup><sub>Feb. 15</sub> Its mechanical detail is shown by the accompany-



LEPLAT'S AXIMETER.  
(*Archives d'Ophthalmologie.*)

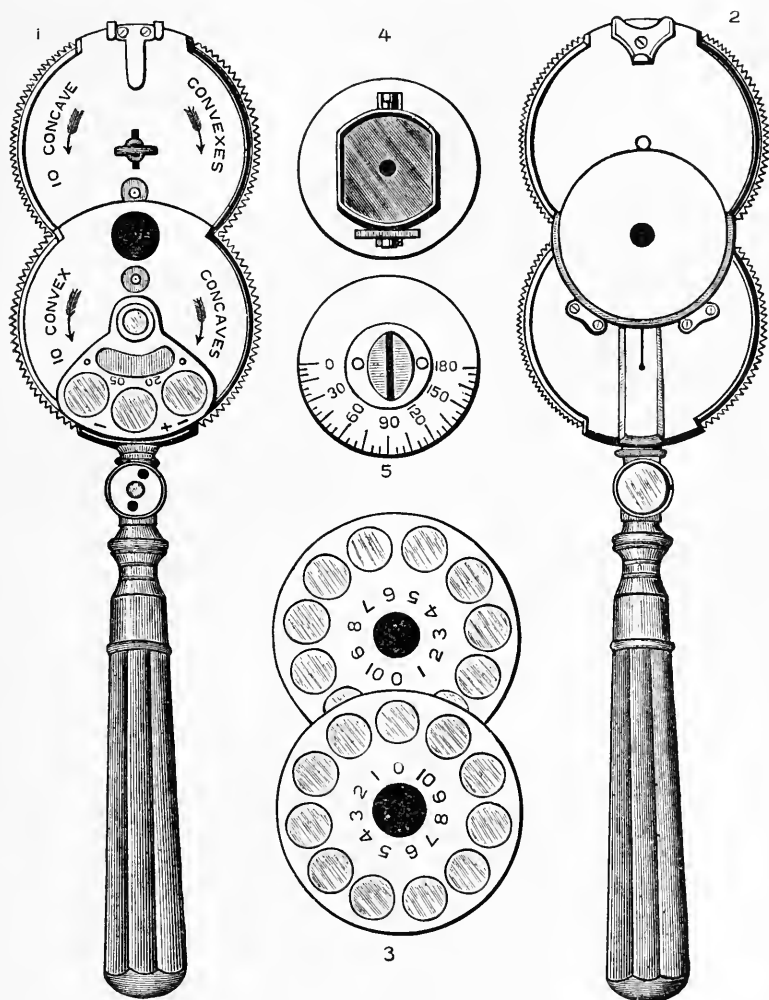
ing cut. As can be seen, the combination of lenses above 10 dioptries is made by superposition, the disks being so arranged that the + 10 D. terminates the minus series, while the - 10 D. ends the convex series. Lenses of + 0.50 D., + 20 D., and - 20 D., arranged on a movable sector, permit the formation of half dioptries from 1 to 19 D., as well as the extension of the integral series from 20 to 39 dioptries. A stenopaïc slit on a separate disk can be added, so that astigmatism may be estimated when

it is desired to employ the instrument for this purpose.

Kalt <sup>173</sup><sub>Mar.</sub> gives us a new form of ophthalmoscope. As shown on page 156, the disk carries nine convex and nine concave lenses, with a fan-shaped, movable sector on the back of the instrument,



holding a  $-0.50$  D., a  $+10$  D., a  $-10$  D., beside an opening without a lens. By this means is formed a series of lenses, from 1 to 19 dioptres, concave or convex, and by the use of the  $-0.50$  D. lens half dioptres can be made in either series up to 10 D.

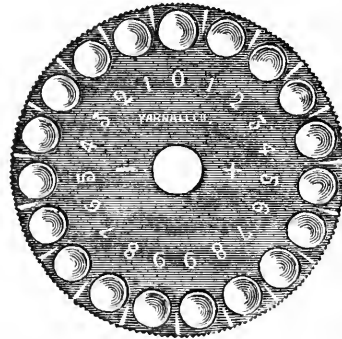
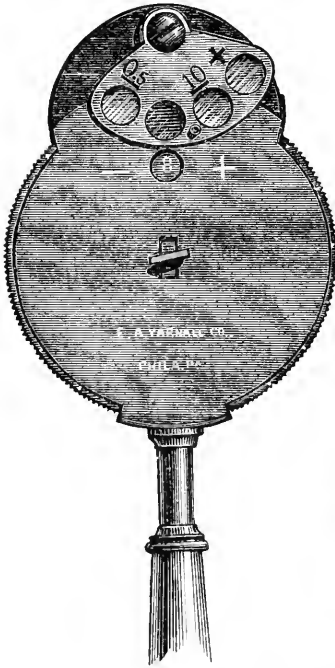


KNÖPFLE'S REFRACTING OPHTHALMOSCOPE.  
(Revue Médicale de l'Est.)

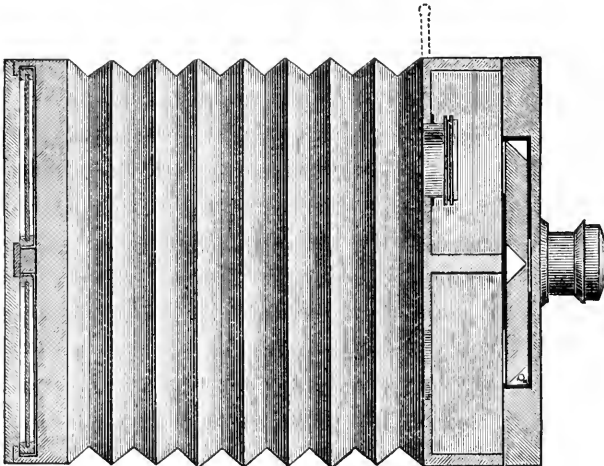
Vignes<sup>78</sup><sub>Aug. 31</sub> presents a new *pince-ciseaux* for secondary cataract, a modification of those of de Wecker, in which one of the two branches is fixed at the extremity of the handle.

Cohn<sup>274</sup><sub>Nov., Dec., '89</sub> has applied rhombohedral prisms to the photographic camera, by which the interior of cavities needing mirror

illumination can be photographed with fair certainty of catching the desired parts of the field. By means of two prisms meeting in the central line of the object-glass the field of view is reflected into two separate dark chambers, in one of which the sensitized plate is exposed, and through the other the operator is enabled, by means of the prism, to watch for the proper moment at which to make the exposure in the adjoin-



KALT'S OPHTHALMOSCOPE.  
(*Recueil d'Ophthalmologie.*)



COHN'S CAMERA.  
(*Archives d'Ophthalmologie.*)

ing chamber. The above cut, which gives a vertical view of the instrument, shows the general arrangement of the apparatus.

## OTOLOGY.

By CHARLES S. TURNBULL, M.D., PH.D.,

AND

ARTHUR AMES BLISS, A.M., M.D.,

PHILADELPHIA.

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FROM the great amount of otological literature of the year, an attempt has been made to gather as much material as possible which can throw some light upon the more obscure phases of aural disease. Reams of paper have been used in describing and re-describing mastoid inflammation and purulent otitis. Very little has been brought out on the discouraging subject of sclerosing inflammation. The reports of post-mortem examinations recorded in the following pages may serve to elucidate the pathology of this condition. In each subject representative papers have been selected which express the ideas found in many other articles upon the same topics. They have been chosen, also, with regard to their practical bearing upon matters of pathology and treatment.

### AURICLE.

*Idiopathic Perichondritis of the Left Auricle.*—Henry Ferrer<sup>66 Jan.</sup> reports this condition as occurring in a young woman aged 18 years. It was preceded by severe attacks of pain, without any objective symptoms, until the appearance of inflammation along the anterior walls of the external meatus, at the base of the tragus. Furunculosis was diagnosed, and a deep incision made through the inflamed parts. No pus was found. Drainage and antisepsis were maintained, but the ear continued to swell until the entire auricle was involved, forming a large, shapeless, inflamed mass. Pus was liberated, eventually, from the pinna, and inflammation gradually subsided, leaving a withered and deformed auricle. Hearing was not affected. The author claims that this case is unique in its idiopathic history.

A somewhat similar case is reported by J. B. McMahon, of

(C-1)

New York.<sup>66 Jan.</sup> The patient, a woman 27 years of age, presented all the symptoms of furunculosis, developing in the lower part of the external meatus. The tissues were incised and the parts healed, but pain continued. Two incisions were made, subsequently, at different times. Fifteen days after the last incision the patient presented "a distinct picture of perichondritis." Suppuration occurred; an opening formed naturally; the cavity was curetted with sharp spoons, and much broken-down cartilage was removed. This procedure was several times repeated, constant drainage being maintained by small silver drainage-tubes covered by firm compresses. These tubes were replaced later by strands of silk thread, and solid nitrate of silver was applied to the pus-cavity. Healing took place, eventually, without any remaining deformity. The same method of treatment—thorough curetting, drainage, and the use of silver nitrate—was used in a case reported in this same article, but of purely traumatic origin. Results were successful, and very slight deformity remained.

*Ossification of the Auricle in Consequence of Perichondritis Sero-Purulenta.*—H. Knapp<sup>66 Jan.</sup> states that ossification is rare, and in the very few cases on record it has resulted from senile changes. Knapp had a patient, a young man 22 years of age, whose history pointed to a long-standing sero-purulent perichondritis, which had not been judiciously treated. The condition had lasted for several years, and the affected auricle had finally become very stiff and painful. "Most conspicuous was a cylindrical intumescence, which extended from the upper anterior part of the pinna transversely backward, and then curved down, corresponding to the antihelix, but filling, also, the fossa of the helix." This hard, bone-like mass was carefully removed, the soft parts brought together, and, after healing, the ear presented quite a normal appearance.

"The anatomical examination of the specimen showed that there was real bone-substance, compact in some places, cancellous in others, and osteoid at the margins. In many places it was soft enough to be cut with a razor." Such specimens presented the usual appearance of bone. (See Fig. 1.) In other locations there was a system of broader marrow-spaces, filled with a net-work of vascular connective tissue and fat-cells (A, O, Fig. 2), bordered by broader and smaller trabeculae of true osseous substance (D, Fig. 2). In other places, again, large islets were seen to lie in connective

tissue or in reticular cartilage, showing small, ragged cells, pretty generally scattered through a homogeneous granular matrix. (Virchow's osteoid tissue, C, Fig. 2; N, Fig. 3.) This tissue was separated from the reticular (yellow or elastic) cartilage (M, Fig. 3) by irregular, lumpy masses—the line of ossification (P, Fig. 3). The reticular cartilage was covered by perichondrium and the common integument. "As there are no unique cases, we may expect to find ossification in the auricle in chronic irritative processes, chiefly in the two kinds of perichondritis, the sero-purulent and the hæmorrhagic (othæmatoma), if we direct our attention to them."

*Hæmatoma Auris.*—B. H. Grove<sup>170</sup><sub>Nov.</sub> has noted this affection in 18 cases. He is uncertain of its etiology, but is convinced that in some cases its origin is idiopathic. The sac formed by the



FIG. 1.

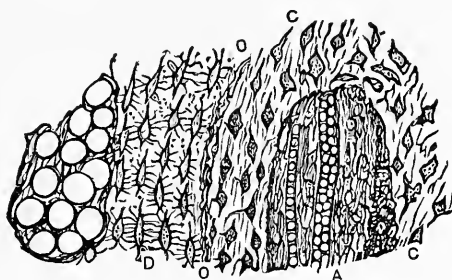


FIG. 2.

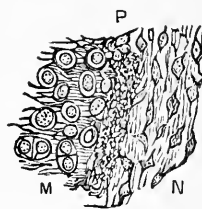


FIG. 3.

OSSIFICATION OF THE AURICLE.  
(*Archives of Otolary.*)

effusion, blood, or serum is usually smooth, and its walls consist of cartilage and perichondrium. If the sac is to be opened, the writer favors the topical use of tinct. iodine comp. The cavity is to be mopped out with this solution, and then firm, gentle pressure is to be applied to the auricle, in order to favor rapid union of the internal walls of the sac. Drainage-tubes and tents are out of place, as, when used, the cavity has always become a pus-forming chamber and the course of the inflammation lengthened.

*Epithelioma of the Auricle.*—Hamon du Fougerey<sup>37</sup><sub>Apr.</sub> describes 2 cases. The respective ages of the patients were 60 and 79 years. In Case 1 the diseased tissue was confined to a small area on the helix of the left ear. For treatment Canquoin's paste was applied and numerous sutures introduced beneath the

affected part. This procedure resulted in the formation of a healthy wound, which gave promise of healing, but three months later the growth recurred at the cicatrix. The same treatment as before was employed, without any result, and the growth increased rapidly, invading the tissues of the temporal region. The patient died a few months later. Microscopic examination proved that the growth was an epithelioma. Case 2. The left auricle was affected, a large, ulcerated surface being presented. Treatment consisted in complete amputation of the auricle by means of a thermo-cautery. Healing was rapid, and there was no recurrence of the growth. Sections proved that the growth was an epithelioma. The author refers to this condition as rare; as occurring in patients advanced in life; as sometimes occurring in localities previously affected with eczema, psoriasis, or impetigo; as of excessively rapid growth; and as requiring most thorough eradication. He prefers the thermo-cautery as a destructive agent.

*Lympho-Cartilaginous Syphiloma of the Auricle.*—L. Julien<sup>287</sup> reports a rare case, describing, by this title, a swelling which appeared in the fossa of the helix of the ear, the patient being a young man. Its appearance was first noted about three months after the initial venereal lesion. Its development was rapid. The growth was somewhat red in color and painful. After its disappearance the skin, at its seat of growth, was indurated and no longer transparent. The writer believes the condition to have been the result of perichondritis affecting the lymphatics of this part, which form a close net-work at the point involved.

*Gangrene of the Auricle.*—At a meeting of the Medical Congress for Internal Medicine, Urbantschitch<sup>22</sup> exhibited a man, one of whose ears, in its upper third, had been gangrenous. The patient, a cabman 37 years of age, had suffered during two years from pain in both auricles. Recently the parts suddenly became black in color, but were restored to their normal condition by a paste applied at the advice of a fellow-cabman. Five days later, while the patient was driving in a hail-storm, the pain returned, and, on the following morning, one of his auricles was again black. He applied for treatment at the Polyclinic, and the affected parts were dressed with a 10-per-cent. emulsion of iodoform. The blackness disappeared in the course of forty-eight hours, except at the margin of the helix. There was no loss of tissue.

## EXTERNAL EAR.

*Foreign Bodies.*—An instrument for extracting foreign bodies from the ear has been devised by Ward Cousins.<sup>2</sup><sub>Sept. 29</sub> It is in the form of a fine wire snare, having two very delicate loops of wire, fixed side by side in a metal stem. The fine wires slip readily over the foreign body, and are then tightened by means of a sliding collar. This procedure is often attended with considerable hæmorrhage. The operation is facilitated by filling the meatus with warm oil. This apparatus is of service for removing substances not removable by careful syringing and of hard character, like beads, stones, etc. The loops are of various sizes and can be altered in shape.

For the removal of foreign bodies by detachment of the auricle, Zaufal<sup>113</sup><sub>Dec. 22, '89</sub> believes that it should be resorted to: 1st. Upon the appearance of symptoms dangerous to life. 2d. When the body is of such consistency as to be absolutely impassable at the isthmus. 3d. When the patient cannot remain under the constant observa-



WARD COUSINS'S AURAL SNARE.  
(*British Medical Journal.*)

tion of the surgeon. In all other cases, after trial by the simple measures for removal, it will be safe to wait for more favorable conditions, after swelling and intense inflammation have partially subsided. When foreign bodies are retained, deeply imbedded in the canal, the author lays great stress upon the importance of observing the patient's temperature and the condition of his eye-ground relative to the development of beginning neuroretinitis. Operative measures must be resorted to before such condition has fully developed. The operation is thus conducted: A horizontal incision is made, 2 centimetres above the concha, extending through the soft tissues to the base of the mastoid process. A second incision is then made, vertical to the first, from the point of the mastoid process to the posterior end of the first incision. The triangular flap, thus made, is dissected from the aponeurosis of the temporal muscle, as far as the base of the zygomatic process. The periosteum and the auricle and covering of the posterior wall of the long external auditory canal are thus deflected almost to

the drum-head. The skin of the external canal, at the junction of the cartilaginous and bony portions, is then cut across, and the remainder of the cutis on the posterior part of the bony wall removed. The fundus of the ear can thus be exposed. The parts are to be re-adjusted, and, in the case reported, were fastened by eight stitches, drainage being maintained at the lower angle of the wound.

In the extraction of foreign bodies accidentally introduced into the ear, Perron<sup>70</sup><sub>Dec. 8, '39</sub> finds that the ordinary speculum is often capable of doing injury when roughly or carelessly applied. This instrument, which is always made too long, is apt to force the foreign body toward the fundus of the auditory canal. The writer uses a speculum of the Toynbee form, but with a calibre corresponding to that of the auditory canal into which it is to be inserted, and having a very short tube. For nervous individuals and for children an anæsthetic must be used. Perfect illumination must be secured. The object can, then, be frequently removed by



FIG. 1.—PERRON'S STYLET.

(*Gazette Heb. des Sciences Méd. de Bordeaux.*)

merely a blunt hook or fine pincers. Manipulation must not be continued for more than a reasonable length of time, nor should injections be persisted in when it is found that such means will not dislodge the body. If the object completely occludes the canal, being imbedded in swollen and inflamed tissue, an incision should be made into the wall. To accomplish this, the author's instrument (Fig. 1) is recommended. This consists of a steel-pointed stylet, its greatest breadth being 1 millimetre, smooth on one side and on the opposite supplied with several sharp and cutting teeth, uneven in length and pointing toward the handle of the instrument. With this knife the speculum (Fig. 2) is to be used. It is large, short, and one side is opened by a slit one-fourth of its circumference. This open track is left free for the passage of the stylet. The blades are passed through the skin beneath the foreign body, the smooth side being presented to the latter. After the blades have cut their way sufficiently beyond the body, the knife is turned so as to bring its teeth in firm contact with the object to be removed, which, by firm, lateral pressure and a careful drawing movement,



can soon be extracted. Traumatism is slight, is confined to a limited area, and does not compare in severity with the disastrous results of retention or of the surgery necessitated by such retention. Where the foreign body is imbedded within the tympanic cavity this instrument cannot be employed. The author then resorts to insufflation through the Eustachian tubes. He has found that pressure of two atmospheres is enough to rupture a normal drum. Less than this will break a drum-head inflamed by the pressure of a foreign substance, and the object is forced out through the rent. Catheterization is used for such inflation. Colin, of Paris, has devised an air-pump, with a manometer attached, and easily manipulated.

For certain cases the methods described in this report may be excellent, but they require, upon the part of the operator, complete knowledge of the anatomy of the parts involved and a high degree of skill in the handling of instruments within this space.

Briggs<sup>147</sup><sub>Aug.</sub> reported to the Society for Medical Improvement, of Sacramento, 2 cases of extensive destruction resulting from manipulations for the removal of foreign bodies from the ear. In the first instance the malleus had been completely detached; in the second the drum-heads and ossicles of both ears had been removed, and, during a period of "inflammatory reaction" which followed, the victim exhibited symptoms of meningitis. This patient, a boy 6 or 7 years of age, is now an inmate of the asylum for the deaf and dumb at Berkeley. Both cases resulted from overzealous interference upon the part, in one case, of a physician; in the other, of "an irregular."

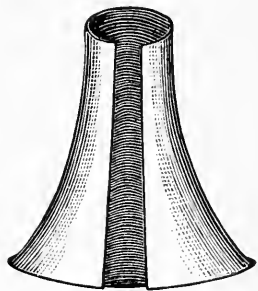


FIG. 2.—PERRON'S SPECULUM.  
(*Gazette Heb. des Sciences Méd. de Bordeaux.*)

#### EXTERNAL OTITIS, ETC.

*An Exostosis in the External Auditory Canal Removed by a Reamer and Dental Engine.*—Robert Barclay<sup>65</sup><sub>Jan.</sub> gives a strong recommendation for the employment of the dental engine to remove exostoses from the auditory canal. One case is reported (see Figs. 1 and 2, next page) in which an ivory-like exostosis almost completely occluded one auditory canal of a patient who suffered from

otorrhœa. Barclay devised the reamer shown in Fig. 3 for this case, and drilled through the centre of the bony mass near its base. The reamer was then pressed broadside against the posterior half of the growth, then against its anterior half, until the mass was sep-

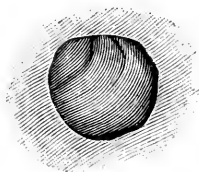


FIG. 1.



FIG. 2.

EXOSTOSIS OF AUDITORY CANAL.  
(*St. Louis Courier of Medicine.*)

arated from the superior wall of the canal. Rough surfaces were then ground down to a level with the surrounding parts. There was profuse bleeding during the operation. The work was completed in forty-five minutes. The after-treatment consisted in the



FIG. 3.—BARCLAY'S REAMER.  
(*St. Louis Courier of Medicine.*)

use of solutions of the corrosive chloride and of peroxide of hydrogen. Redundant tissue was checked by the use of silver nitrate. The result of this operation was most satisfactory.

*Furunculosis.*—Williams, of St. Louis, <sup>109</sup><sub>Dec., '89</sub> reports a case of

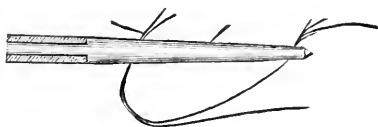


FIG. 4.—REAMER PASSING THROUGH THE  
EXOSTOSIS.

(*St. Louis Courier of Medicine.*)



FIG. 5.—ANTERIOR VIEW OF  
PERFORATION.

furunculosis which had commenced as one of single external otitis, but, having been treated persistently with hot-water applications and poultices, had developed into furunculosis. Both auricles had an erysipelatous appearance, and the fundus of each ear was filled

with foul-smelling pus. Pain was intense. For treatment the external canal was cleansed and disinfected. Dry boracic acid was applied to the fundus. Pain ceased after the first treatment, but this procedure was continued until suppuration ceased.

Fourteen cases of acute and chronic "ear trouble" (purulent otitis?) had been treated at the Cincinnati Hospital, <sup>53</sup><sub>May 31</sub> the same instruments being used for all these patients as well as for all others attending this service. An unusual number of cases of furunculosis developed at this time, and it is supposed that the instruments were the means of carrying infecting material from one case to another.

*Otitis Externa Hæmorrhagica.*—Gorham Bacon, <sup>66</sup><sub>Jan.</sub> records 5 cases of this rare condition, which is characterized by pain not of high grade, slight congestion of the drum-head, and the presence of one or more vesicles upon the walls of the bony portion of the external auditory canal, which are filled with bloody fluid. These vesicles are produced by the rupture of small vessels and effusion beneath the epidermis. The writer concludes that this rare condition is a disease *per se*, occurring more frequently among young persons than in elderly individuals, most frequently in males; that the left meatus is usually the affected one, and that the vesicles are found most frequently on the inferior wall of the external canal in its bony part. They may appear on the other walls or extend to the drum-head.

*Atresia of the External Auditory Meatus.*—Seth Bishop, of Chicago, <sup>700</sup><sub>Sept. 27</sub> enumerates 4 cases,—3 children and 1 adult. The latter, a man 29 years of age, had received a severe injury in early childhood which resulted in the cicatricial closure of the meatus of one ear. For many years pus escaped from the external auditory canal of this ear through a very minute fistulous tract. Operative procedures for making a permanent opening were not successful, but hearing was greatly improved. "The remarkable circumstance in this case is, that the perceptive apparatus and the conductive mechanism should retain their function after twenty-seven years of apparent disuse."

*Anatomical and Clinical Study of Acquired Atresia of the External Auditory Canal.*—Adam Politzer <sup>84</sup><sub>May 24</sub> says that this condition develops most frequently as a consequence of otorrhœa, causing inflammation of the external canal. Granulation tissue, thus pro-

duced, springs from the walls of the canal and gradually unites into one mass, which, in time, becomes fibrous or bony. The latter condition is frequently caused by sequestra of carious bone from the mastoid cells or walls of the external canal, which have become imbedded in the granulations within the lumen of the tube. In rare cases it results from desquamative otitis, or develops in consequence of traumatism. In such cases abraded surfaces may be brought in contact by swelling of the walls of the external canal, and union of the parts produces occlusion of the tube. Two cases are reported,—the first, a woman aged 72 years, who died from marasmus. Twenty years ago she applied to Politzer for aural treatment. Examination then showed perforation of drum-head of the left ear, otorrhœa, and polypi in the tympanic cavity. Most of these growths were removed, but grew again later, and became attached to the walls of the external canal. This process continued, in spite of frequent efforts to remove the polypi permanently. Otorrhœa continued and a slight paralysis of the facial nerve developed. The tuning-fork, on vertex, was heard most clearly in the affected ear. Several years later this patient was seen again by the author. The polypi now entirely filled the external canal, and could not be separated from its walls. Atresia was complete, the canal being closed as far as the external meatus, where the mass showed a concave depression, covered by thickened epithelium. The tuning-fork was now perceived only on the right (unaffected) side. There was total deafness of the left ear. Pain, tinnitus, and vertigo were the subjective conditions complained of by the patient, and no change occurred in the aural symptoms during the remainder of her life. Atresia had resulted from the attachment of a large polypus to the walls of the external canal. At the post-mortem examination the entire canal and tympanic cavity were found filled with a solid mass of connective tissue, no trace of the drum-head or ossicles remaining. A cholesteatomatous mass occupied an irregular cavity in the centre of the lower portion of this fibrous growth, and extended into the tympanic cavity and lower part of the pyramid. The cavity from which the fibrous mass was removed was lined with irregular, pigmented, fibrous tissue. The lower bony wall of the vestibule was defective and largely replaced by connective tissue. This material in the upper part of the tympanic cavity penetrated into the Fallopian canal, and continued on into the

internal auditory canal and cochlea, entirely filling these parts, and involved the region of the anterior and horizontal ampullæ. The posterior portion of the vestibule and the semicircular canals were free. It is not certain that the acoustic and facial nerves were involved in the mass, as a microscopic examination was not made. The antrum was destroyed and the mastoid process sclerosed and without cells. Within the skull, in the space between the upper border of the pyramid, transverse sinus, and occipital foramen, irregular-shaped tumors were found attached to the thickened dura mater. Their size was about that of hazel-nuts. These masses

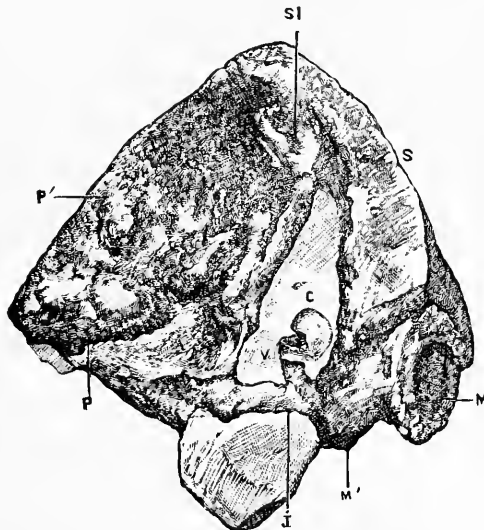


FIG. 1.

(Wiener Med. Wochensch.)

M, concavity at entrance of occluded auditory canal; M M', connective-tissue growth in the canal; J, growth extending from the tympanum, through the facial canal, into the cranial fossa; V, also in the cochlea; C, horizontal semicircular canal; S, squamosa; SI, sinus lateralis; P P', irregular, rough tumor in the posterior cranial fossa beneath the dura mater.

were continuous with the connective-tissue growths in the internal auditory canal, and their irregular protuberances occluded the transverse sinus. They were composed of dense fibrous tissue inclosing masses of detritus and fatty matter. By two different routes the inflammatory changes had advanced internally,—first, by the facial canal and its nerve, the sheath of which was infiltrated by this tissue. From here the sclerosis, upon one side, extended into the cochlea and vestibule, the wall of the former being broken through. On the other side the process had passed from the

internal auditory canal through the porus acousticus internus, beneath the dura mater, as far as the tumors in the posterior cranial fossa. Second: the second route was by the inferior wall of the pyramid, where the connective-tissue mass had reached the dura mater by passing through the inferior wall of the vestibule. The involvement of the labyrinth had evidently occurred subsequent to the first examination of the patient, as, at that time, vibrations on the vertex were perceived in the affected ear, but could not be heard at the time of the second examination. The second case, the patient, a man 64 years of age, had suffered in boyhood from

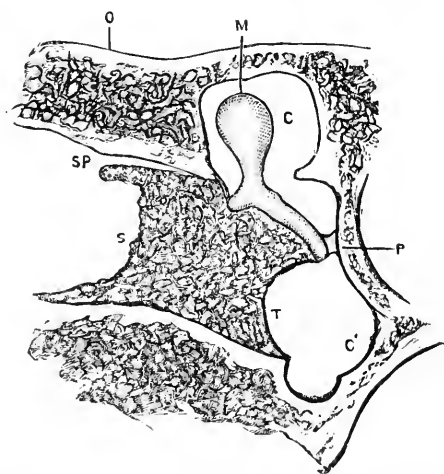


FIG. 2.—VERTICAL SECTION THROUGH THE EXTERNAL AUDITORY CANAL AND TYMPANUM, FROM A CASE OF ATRESIA OF THE CANAL, FOLLOWING OTORRHOEA.

(*Wiener Med. Wochenschr.*)

O, upper, U, lower walls of the canal; C C', tympanum; T, inner surface of drum-head; M, head of malleus; S, external surface of connective-tissue growth, occluding the bony part of the auditory canal; SP, space between growth and the posterior-superior wall of canal; P, adhesion between lower end of manubrium and promontory.

otorrhœa causing deafness. The external auditory canals were occluded by fibrous masses which filled their bony portions. The tuning-fork was heard only upon contact. Weber's method gave localization upon the left side; that of Rinné was negative for both sides. High-pitched tones were more readily perceived than those of low pitch. The necropsy revealed the following conditions:—

The manubrium, detached from the drum-head, was adherent, by its extremity, to the promontory. The other ossicles were normal. Microscopic examination was made of the growth in the right ear. Horizontal sections showed this mass to be formed,

anteriorly, of thick, fibrous tissue, whose anterior face, composed of dense connective tissue, was covered by the cutis of the external canal. This structure became more fibrillated as it radiated inward, open spaces appearing between the fibrillæ as it became looser and more spongy. This formation resembled that of the angiomatic polypi described by Moos and Politzer. The larger spaces were cross-sections of enlarged blood-vessels, surrounded by thick, vascular connective tissue.

Here, also, were small ramifications of vessels, star-shaped groups of fat-cells, pigment, and cyst-like spaces lined with epi-

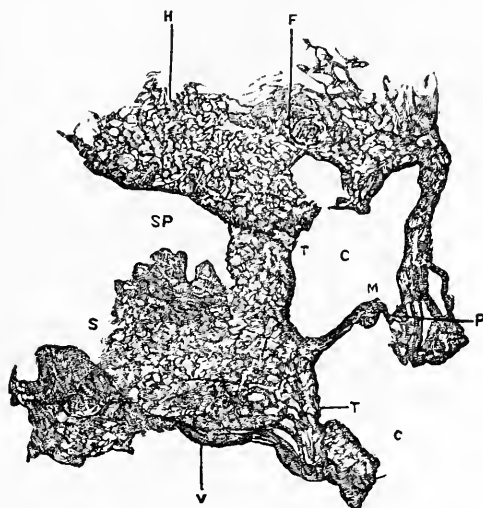


FIG. 3.—HORIZONTAL SECTION FROM THE SAME CASE.  
(*Wiener Med. Wochensch.*)

V, antrum; H, posterior walls of auditory canal; C C, tympanum; T T, inner surface of drum-head; S, connective-tissue mass in the posterior part of the bony auditory canal and its adhesions with the drum-head and walls of the canal; SP, space between connective-tissue growth and posterior wall of the canal; M, cross-section of the manubrium; P, adhesions between the manubrium and promontory.

thelium, and resembling similar structures described by Politzer as found in the mucous membrane of the middle ear in purulent middle-ear catarrh. A small space partly separated the connective-tissue mass from the superior wall of the bony external canal. The mass closely adhered to the lower and central part of the drum-head. A band united the loosened manubrium to the drum, this band being the funnel-like portion of the membrane which borders the malleus. The end of the ossicle was bound to the promontory by a small bridge of connective tissue covered by epithelium. The case had commenced, undoubtedly, as a chronic

suppuration of the bony external canal and the external layers of the drum-head. Union of granulated surfaces occurred, the process advancing from below upward. The softened drum-head yielded, and the tensor tympani drew the manubrium against the promontory, to which it became attached. Both these cases point to the importance of early and complete removal of polypi and granulation tissue.

#### MEMBRANA TYMPANI.

*Observations on the Topography of the Normal Human Tympanum.*—Dr. William S. Bryant, <sup>66</sup><sub>Oct.</sub> of Boston, writes a remarkably interesting article on this subject, containing a colored plate which we reproduce.

The mucous folds are arranged in three groups: 1. Those in the mastoid antrum. Here there is usually a central, longitudinal band with radiating trabeculae, some of which extend to the back of the incus and head of the malleus. The general arrangement often suggests that of the osseous trabeculae of the mastoid cells, of which, indeed, the bands seem to be continuations. 2. Those attached to the malleus and incus. These radiate from the three long axes of the bones. They vary much in direction in different specimens, but exist so generally as to be considered normal structures. 3. Those of the stapes, round window, and neighboring tympanic walls. In only 3 specimens, 106 out of 109, was the stapes found to be without some mucous reduplications. These are most numerous where the mucous membrane is thickest. The bone is usually most adherent to the lower wall of the pelvis, the foot-plate being in closer relation with this wall than with the upper, for the lower wall rises more abruptly from the edge of the fenestrum ovale.

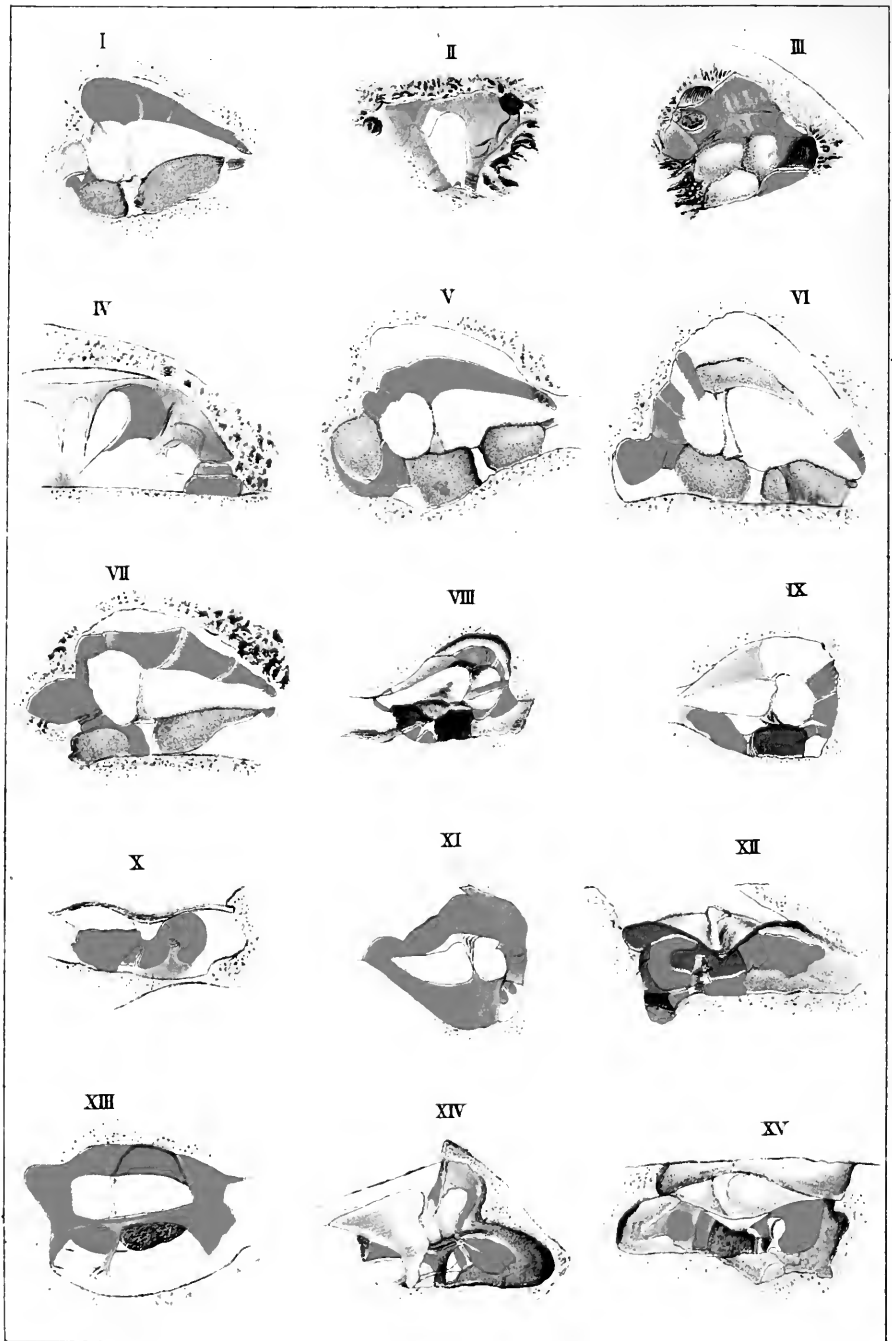
These mucous reduplications perform the functions of ligaments, and their anatomical elements correspond to those of ligaments, the connective tissue, of course, being in less amount.

A most striking feature is their constant variation. The constant folds, also, show much diversity in different tympana, on account of variability in points of attachment. This is often to be noted in the two tympana of the same individual. They are most numerous and fully developed in childhood. From adult life toward old age they tend to undergo atrophy.

This paper is of especial interest in connection with efforts







Normal Human Tympanum (Bryant).  
Archives of Otolaryngology.

made by some authorities to account for these reduplications on pathological grounds. The writer has observed the utmost care to include only normal specimens in his series of studies.

*Figures.*—All the figures illustrating this article were drawn from nature, and are several times the natural size. The mucous-membrane reduplications are indicated by color. The lightest colored one is the nearest to the eye.

Fig. 1. Fœtal tympanum at term opened from above, showing the inferior external fold. The lower part of the anterior fold of the malleus can be seen on the upper surface of the malleus. The internal fold of the malleus lies in front of the head of malleus, and nearly crosses the tensor tympani fold, which can be just seen on its inner side. Fig. 2. Adult tympanum, viewed from above and behind. Mucous folds extend forward from the mastoid antrum on to the ossicula. There is a superior external fold, and abundant folds about the head of the malleus. This is the same tympanum as in Fig. 12. Fig. 3. Adult tympanum, the same as in Fig. 15, looking forward, downward, and outward. A mass of folds extends forward from the mastoid antrum on to the ossicula. The anterior fold of the malleus can be seen, also the tensor tympani fold. A fibre joins the head of the malleus to the internal wall. Fig. 4. Adult tympanum, the same as in Fig. 9, looking outward. The anterior fold of the malleus is seen, also folds extending from the mastoid antrum. A part of the superior external fold can be seen in the background, and in the foreground a part of the tensor tympani fold. Fig. 5. Adult tympanum, viewed from above. Anterior to the head of the malleus, and reaching up over it a little, the external fold of the malleus can be seen going outward to join the inferior external fold. The lower part of the anterior fold of the malleus is seen. The tensor tympani fold is seen in an imperfect condition. Fig. 6. Adult tympanum, opened from above. Anterior to the inner surface of the head of the malleus the internal fold of the malleus can be seen. The lower part of the anterior fold of the malleus is external to this, and external to this again is a remnant of the external fold of the malleus. The external folds are unusually imperfect, and reduced to a small web attached to the posterior ligament of the incus. The tensor tympani fold is in the anterior end of the tympanum. A fibre extends from the body of the incus to the inner wall of the tympanum, which is a part of an imperfect posterior internal fold. Fig. 7. Adult tympanum, opened from above. On the inner side of the head of the malleus a mucous web extends along the posterior edge of the tensor tympani tendon and the anterior surface of the long process of the incus. This is really an imperfect anterior internal fold. Anteriorly lies the tensor tympani fold. The external fold appears of irregular level. Fig. 8. Adult tympanum, the same as in Fig. 14, viewed from above. This shows the inferior external fold, the tensor tympani fold, and the anterior fold of the malleus rising obliquely outward. Fig. 9. Adult tympanum, the same as in Fig. 14, viewed from above. This shows the posterior internal fold; also the posterior part of the superior external fold, the anterior part having been removed. The anterior and the internal folds of the malleus can be seen, and a very small part of the tensor tympani fold. Fig. 10. Adult tympanum, from the same individual as Fig. 11, viewed from below. This shows a completely divided tympanum; the ossicles, except the manubrium, are cut off by a curtain of mucous membrane. The anterior and the posterior internal folds are shown. Fig. 11. Adult tympanum, from the same individual as Fig. 10, viewed from above. This shows the anterior and posterior internal folds; also the superior external fold, the anterior fold of the malleus, and an unusual internal fold of the malleus. Here there is complete horizontal division of the tympanum. Fig. 12. Adult tympanum, the same as in Fig. 8, viewed from below. This shows the tensor tympani fold, the internal folds,

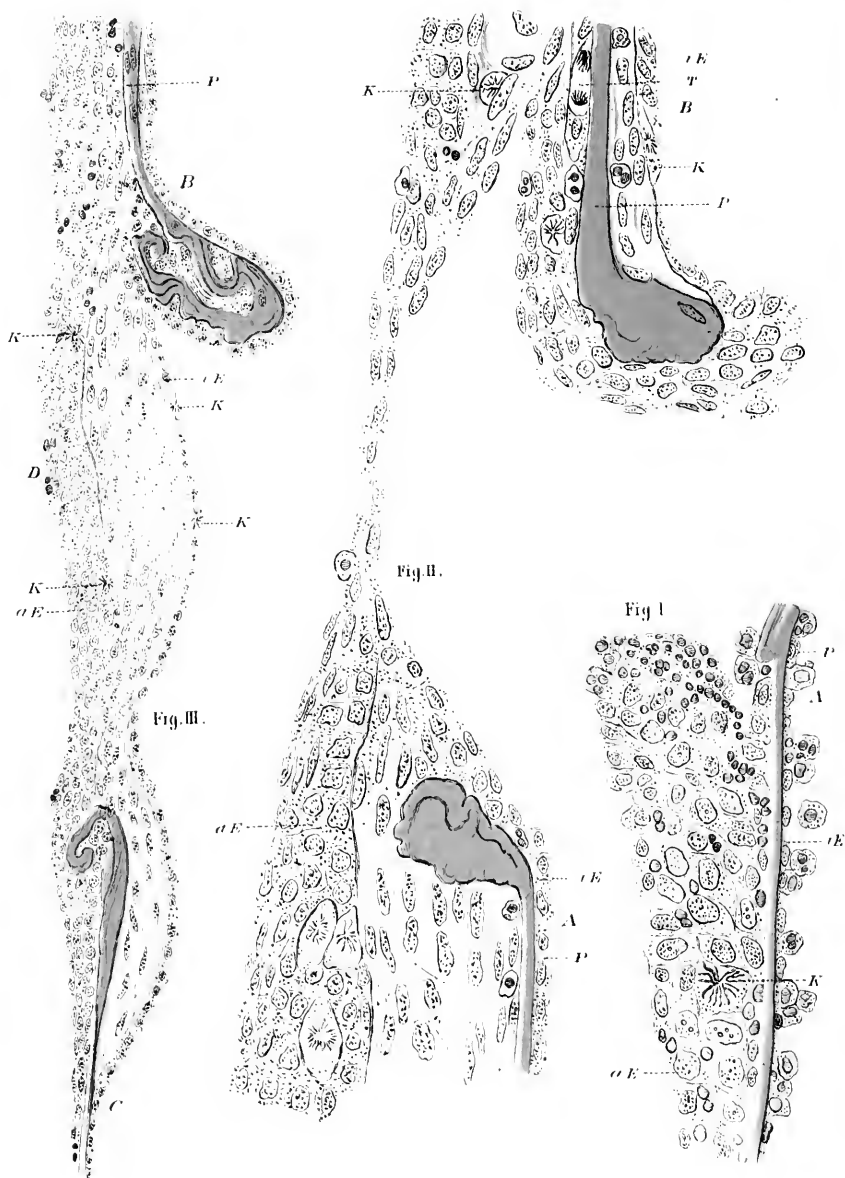
the webbing of the malleus and incus, and the vertical fold of the incus. Fig. 13. Adult tympanum, viewed from above. This shows the top edge of the vertical fold of the incus; also an irregular mass of mucous membrane in front of the head of the malleus, the anterior internal fold, and the external fold. Fig. 14. Adult tympanum, the same as in Fig. 8, looking outward. This shows the fold of the posterior pocket of the membrana tympani; also mucous fibres occurring in irregular positions, the anterior fold of the malleus, the tensor tympani fold, a part of the external fold, and the webbing between the malleus and the incus. Fig. 15. Adult tympanum, the same as in Fig. 3, viewed from below. This shows the inferior tensor tympani fold, which is here perforated, and through the perforation the superior tensor tympani fold. Irregular mucous-membrane fibres are shown, and mucous-membrane webbing between the malleus and the incus; also the posterior internal fold.

*Blake's Disks of Paper.*—Robert Barclay <sup>99</sup><sub>July 31</sub> reports 9 cases of perforation of the drum-head in which the opening was permanently healed by the use of these paper disks. He concludes that they can do all that Blake has already claimed, and, in addition, can effect permanent improvement in hearing, hasten the closure of even large perforations, and can be used even before the outer layer of the drum-head has returned to its normal state.

*On the Value of Collodion as a Means of Treating Relaxation of the Membrana Tympani.*—C. Keller <sup>385</sup><sub>Jan.</sub> says that McKeown, of Belfast, advocated the use of collodion for this purpose about twenty years ago. As revived by Keller, the method is thus carried out: The affected ear having been Politzerized, the fundus is filled with collodion, which soon hardens and remains in place for two or three weeks. The author claims to have obtained better results from this than from any other form of treatment.

*Regeneration and Cicatrization of the Drum-Head.*—Rumler, of Munich, <sup>328</sup><sub>May</sub> says that the observations of Schwartze, Politzer, Gruber, and other authorities upon this subject appear to have been based upon theoretical grounds rather than upon actual microscopic examination of the affected part. Rumler has conducted a series of experiments upon the drum-heads of dogs, perforating the membranes and examining them at different stages of the course of healing. As a result of his work, he finds that, within six hours after rupture of a drum-head, the epithelium of its outer surface begins the work of repair by rapid proliferation and growth of its cells. During three days this continues to be the prominent element in the work of closure. Forty-eight hours after the injury the epithelium of the inner or mucous coat of the drum-head and, at the same time, its underlying connective tissue join in the process. The two layers advance concentrically toward the centre





## Regeneration of the Drum-Head (Rumler)

Archiv für Ohrenheilkunde

of the perforation. The membrana propria has little, if anything, to do in the restoration of the drum-head, and is the last layer to show activity in the work of repair.

In the accompanying plate the letters are common for the same tissues in each section. Those for which no explanation is given relate to measurements, diameters, etc. P, propria; I E, inner epithelium; A E, outer epithelium; K, nuclei. Fig. 1, a vertical section, including the perforation, taken between the manubrium and periphery. The increase in the drum-head's diameter is due entirely to proliferation of the external epithelium (A E). The propria (P) is retracted, and does not appear to be altered; nor does the inner epithelium show activity except at one point, where some wandering cells appear. Fig. 2 is from a section parallel to the manubrium, made sixty hours after the injury. The outer epithelium has closed the wound. Beneath this layer three cells, with enlarged and dividing nuclei, are seen. There is but little alteration in the propria.

Fig. 3. Fourteenth day. This section is also parallel to the manubrium. Irregularity of the closure is apparent where the upper edge of the perforation is retracted and curled inward. The rent is now entirely covered by endothelium, which is still in a stage of rapid proliferation. The embryonal tissue is reduced to merely a small space, and is replaced by a heavy growth of somewhat dense connective tissue, whose fibres multiply and become thicker near the circumference of the wound. The outer epithelium has increased its layers and has formed a symmetrical covering over the entire perforation. Sections made after the lapse of one month from the injury presented very similar appearances to those illustrated in Fig. 3.

#### MIDDLE EAR.

*Otitis as a Result of Influenza.*—The epidemic of influenza has set loose quite a flood of literature upon the otological complications attending this disease. Space is insufficient for detailed reports of even the most important papers, but the opinions expressed in all these writings can be thus generalized: Otitis, as a result of influenza, was accompanied by excessive hyperæmia and unusually severe pain, which radiated over an extensive tract; suppuration was a common occurrence and the otorrhœa very

profuse ; hæmorrhage into the connective tissue was frequent, as shown by bullæ on the drum-head, or at the fundus of the external canal, filled with blood or bloody serum ; involvement of the mastoid cells was more frequent than in cases of simple otitis media ; constitutional symptoms were pronounced, and patients suffered from great prostration. Although, in most cases, the middle-ear inflammation originated by continuity from the nasopharynx through the Eustachian tubes, there were numerous instances in which the aural symptoms seemed to arise without any intercurrent inflammatory condition in the pharynx. All the micro-organisms commonly found in purulent otitis—streptococcus, staphylococcus, pneumococcus—were present in the discharges, but no one of these microbes seemed to act as a specific form. No specific microbe has been discovered. The opinion seems to be general that the inflammation was not a simple otitis, but was due to a specific cause. In the absence of tangible proof for this opinion, and considering a large number of reports from various sources, the general reader will question the specific nature of the otitis of influenza. To him it will appear to have been a simple otitis, in which the intensity of the local inflammation was in direct ratio with the intensity of the general symptoms ; that its seat of origin, for aural complications, was the nares and nasopharynx ; that the symptoms were rendered more pronounced by the adynamic state which was a general condition in this epidemic. In such a general disease, involving the mucous membrane of the respiratory tract and ear, there are certain to be many cases presenting symptoms which may differ from the train observed most frequently in inflammations of this tissue. Such divergencies do not always demand a specific organism for their explanation. The severe neuralgic pains, the mental confusion, and profound depression, causing the patient so frequently, at the beginning of an attack, to resort to self-treatment or to unskilled professional attention for his aural symptoms, may account for many irregularities as seen in certain individual cases.

#### OTORRHŒA.

*Therapeutics.*—According to Szenes,<sup>57</sup> menthol has given very satisfactory results in furunculosis, but often causes a very severe burning sensation. It is used in a 20-per-cent. solution with



oil, a cotton tampon being moistened in this solution and set into the external canal. *Aluminum acetico-tartaricum* in 20-per-cent. solution is useful in furunculosis, especially after the boils have been opened. A weaker solution, one-fourth of this strength, is of advantage in the diffuse inflammation of the external auditory canal which often accompanies otorrhœa (chronic). A 15-per-cent. solution of *carbolic-glycerin* has given good results in diffuse hyperæmia of the drum-head, without effusion. It seems often to lessen pain, but frequently fails to stop a discharge when otorrhœa has commenced. *Creolin* is not recommended except in the form of a 2-per-cent. creolin ointment, to be used for eczema of the auditory canal and auricle. Of medicine in the form of powder, boracic acid is still the leader. *Iodol*, *bismuth salicylate*, and the new substance, *aristol*, have all been tried and found wanting. In most cases of acute purulent otitis the use of powders is unnecessary, as healing will usually progress when the affected parts are kept thoroughly clean. *Lactic acid* has been used in 15-per-cent. solution, and causes great irritation to the auditory canal and auricle. *Cocaine* in 4-per-cent. solution has been employed for the relief of tinnitus; 1 or 2 drops are forced into the tympanic cavity by catheter through the Eustachian tube. Where other means have failed, and when the cocaine injections are long continued, some relief is obtained. Care must be taken to avoid cocaine intoxication.

*Massage* has given excellent results. In acute otitis it is to be employed after the effusion has ceased, or, in older cases, where a slight amount of pus is constantly present and cannot be stopped by the usual method of treatment.

As a stimulating application we have found a 20-per-cent. solution of menthol in petrolol to be the most effective in promoting the secretion of cerumen, even in cases where the glands were supposed to have atrophied; and in furunculous otitis we know of nothing better as an aseptic emollient.

*Camphorated naphthol for purulent otitis* is recommended by L. Dumont.<sup>3</sup> in the following formula:—

R	Beta-naphthol, . . . . .	100 grammes (3½ ounces).
	Camphor, . . . . .	200 grammes (6½ ounces).

Powder fine, triturate until the substances liquefy, then heat until fusion is complete; filter and pour the liquid into well-corked

bottles, so as to avoid volatilization and alteration. Application: Cleanse the affected ear by injections of antiseptic fluids, boric-acid solution being recommended. The parts are then thoroughly dried with antiseptic absorbent cotton. A small pledget of cotton is then fixed to the end of a fine aural applicator, moistened with the camphorated naphthol, and applied directly to the fundus of the ear, care being taken to avoid contact with the walls of the canal.

In lesions of the attic this application can be made through the perforation in the drum-head by a still finer probe, with end bent at right angles to its shank. Most excellent results are claimed for this treatment. The applications are to be made about thrice weekly.

H. Cuvillier, of Paris,<sup>37</sup><sub>May</sub> reports 9 cases of otorrhœa successfully treated by *camphorated salol*, 2 patients being still under treatment. The substance closely resembles camphorated naphthol, but is less irritating and quite as strongly antiseptic. The ear is to be first freed of pus and cleansed with a boric-acid solution. A small tuft of absorbent cotton is then rolled loosely on the end of a fine probe. This is dipped into the solution of camphorated salol and merely moistened; it must not be dripping. This pledget is inserted into the canal, pushed to the fundus, and is then detached from the probe. It is to remain in place for twenty-four hours, the patient himself removing it. Applications are thus made every second day, and in the interval the patient cleanses the ear with a 2-per-cent. solution of boric acid.

Allyn, of Alleghany,<sup>161</sup><sub>Dec., '89</sub> recommends the use of *iodine* for curing the layer of pus and desquamated epithelium which forms a tenacious mass in the fundus and along the walls of the auditory canal. This layer forms rapidly, is difficult to remove, and leaves an inflamed surface beneath it. The mass having been removed, the canal should be coated with vaseline, except over the points to be touched. To these latter the solution of iodine in glycerin, 1 part to 10 parts, is applied. Favorable results are reported.

Robert Barclay, of St. Louis,<sup>59</sup><sub>Aug., '83</sub> reports good results from the use of *pyoktanin* for otorrhœa. The course of the inflammation is greatly shortened. His solution is 1 to 1000. This is to be instilled into the affected ear, retained for about ten minutes, and then removed by means of small pledgets of absorbent cotton.

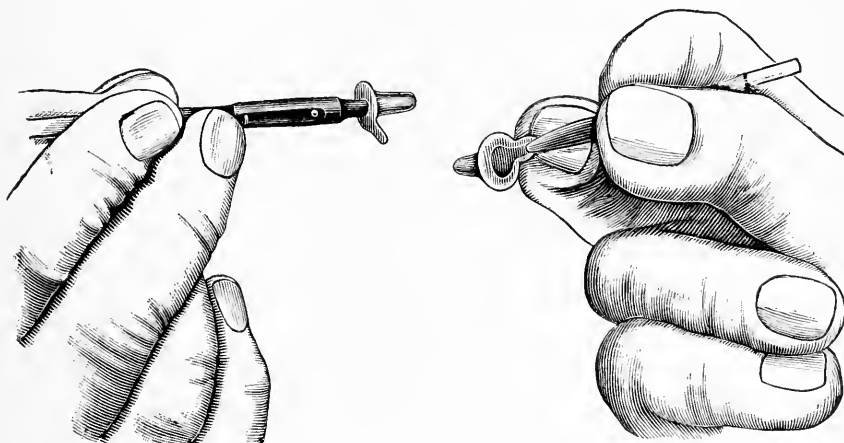
Very good results are claimed by R. M'Kenzie Johnston<sup>36 Jan</sup> from the use of *papaïn* in the following formula:—

R Sol. *papaïn* (5 per cent.), . . . . . f $\overline{3}$ ss (15.0 grammes).  
Sodii bicarb., . . . . . gr. v. ( 0.32 gramme).

Drop 15 minims of this solution into the affected ear.

This is to be retained for one hour, and the ear is then syringed out with boracic lotion and carefully dried. The method is of especial service in cases of chronic otorrhœa with scanty, ill-smelling discharge. Good results have been obtained with this agent during one year of practice.

Tcheltzoff<sup>859 25 No.18; May</sup> advises the use of *styron* for purulent otitis. The material is one of the constituents of Peruvian balsam, and



WARD COUSINS'S COTTON-HOLDER AND ARTIFICIAL EAR-DRUM APPLICATOR.  
(*Provincial Medical Journal*).

has the odor of hyacinth flowers. Its crystals are long, fine needles, insoluble in water, but soluble in alcohol or ether. The commercial liq. *styron* is less costly and equally serviceable. The formula employed was—

R *Styroni liquid*i, . . . . . ℥xx ( 1.3 grammes).  
Spirit. vini, . . . . . f $\overline{3}$ j (30.0 grammes).

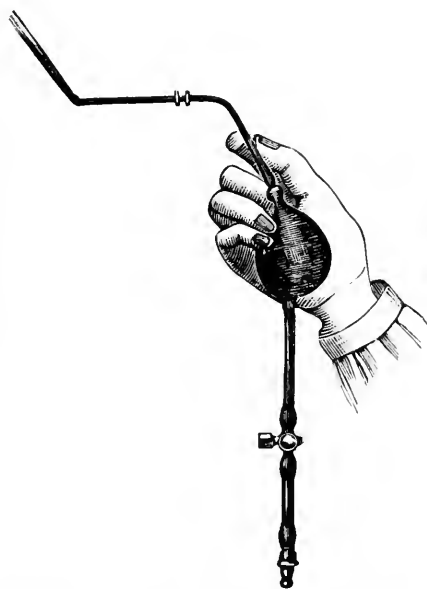
M. Sig.: Add one or two teaspoonfuls to a tumblerful of warm water. Use as a wash for the ear, syringing two or three times daily.

The ear is to be cleansed with clear water before using this solution. Good results are claimed for this drug. A. F. Prüssak, of St. Petersburg, has also found it of service in his practice.

A *very convenient cotton-holder* has been devised by Ward Cousins. This instrument is 4 inches in length, having a probe

and sliding collar at one end and a forceps at the other. Cotton is wrapped about the probe end, and after being soiled by use is detached by merely sliding the collar forward, pressing the forefinger or thumb against a knob upon this ring. The instrument is also of service for adjusting or removing Cousins's new artificial ear-drum. (See ANNUAL, 1890, vol. iv, "Otology.") Patients can be readily taught to use this instrument. Cousins also uses an antiseptic wool rendered aromatic by charging it with the volatile products obtained from *pumiline* pine.

*A new modification of Hartmann's tympanic syringe is*



MODIFICATION OF HARTMANN'S SYRINGE.  
(Illustr. *Monatsschrift der ärzt. Polytechnik.*)

claimed to have the following advantages, viz., <sup>71</sup>Nov. the movability of its nozzle, the possibility of maintaining a constant stream of fluid without removing or varying the direction of the instrument, and the ability to vary the force of the stream. The syringe is supplied with Hartmann's canula. The handle, being set at an angle, allows a clear view of the auditory canal. From the insertion of this hollow handle into the rubber bulb (size of a hen's egg) a gum tube extends, which conducts fluid from a vessel into the bulb. Compression of the latter forces a stream through the Hartmann

canula. The instrument is of great service in cleansing the tympanic cavity and in dislodging cholesteatomatous masses and dried secretion. The handle is held by thumb and first finger, while the remaining three fingers press the bulb against the palm of the hand.

*Cholesteatoma.*—Cholesteatoma of the ear has been a subject exciting renewed interest since Virchow, last year, in discussing a paper by Küster (see ANNUAL, 1890, vol. iv, "Otology"), declared that, of the fatal cases of purulent otitis, nearly one-third are to be ascribed to this form of growth. Virchow declared positively that

this formation was a heterologous neoplasm due to disturbance of embryonal development. Bezold differs in opinion from Virchow, and finds the origin of cholesteatoma to be due to conversion of the mucous membrane lining the aural cavities into epidermis and a proliferation of epithelium. The cutis advances from remnants of the drum-head or from the skin of the external auditory canal, following the course bridged by synechial bands, and spreads over the entire area, replacing the mucous covering. In a discussion as to the origin of cholesteatoma, held at the Tenth International Medical Congress, 1890, Bezold closed the series of remarks by the statement that the question as to the origin must remain "*in suspensa*." There, certainly, it must continue long to swing, if aurists differ in opinion as remarkably as did the eminent specialists who took part in this discussion,—Kuhn, Bezold, Barth, Lucae, Jansen, Zaufal, Moos, and Magnus. Opinions centred around three different theories: (*a*) that of Posner, which maintains the possibility of cells, whose origin may have been ecto-, meso-, or endo-dermal, to undergo an epidermoidal degeneration; (*b*) the theory described by Bezold and already referred to; (*c*) that they may be secondary products resulting from suppurative inflammation. B. Alexander Randall, of Philadelphia,<sup>61</sup><sub>Sept. 6</sub> acknowledges the possibility of a primary growth existing within the temporal bone, but holds that the majority of cases, as seen in practice, result from destructive suppurative inflammation. Notes of several cases are given in which the deposits had advanced unmistakably from a diseased tympanic cavity, filling the external canal, tympanum, and antrum with an epidermal mass, the deeper layers of which were actually attached, by organic union, to the lining membrane of the cavity. The removal of these laminated masses was most difficult, and, after the canal had been apparently cleaned, it would soon become filled again with masses often suddenly displaced from adjoining cavities, into which they had been packed tightly. In one case it was manifest that the accumulation had eroded the superior wall of the tympanum and was pressing upon the meninges. In addition to primary, pearly bodies, and to these products of desquamative inflammation, there must be noted, also, secondary cholesteatoma, which vary but slightly from the primary, pearly tumors. The distinguishing characteristic is that these latter contain nuclear masses of caseous matter. Treatment,

as noted by Randall's cases, consisted in a complete removal of the masses,—a difficult process, and one requiring repetition, as deeper layers of the accumulation fall into the external canal after the removal of portions which had supported them.

*The Operative Treatment of Cholesteatoma of the Tympanic Cavity and Adjacent Spaces.*—Zaufal's method <sup>113</sup><sub>June 3</sub> is based upon that of Küster. The auricle and posterior wall of the bony external canal are detached by incisions similar to those described in the author's article on the removal of foreign bodies. (See the article on "External Ear," this volume.) The posterior and superior bony walls of the canal are then chiseled so that the surrounding cells are laid open and the tympanum, antrum, and passages into the mastoid cells thoroughly exposed. The cholesteatomatous masses are then scraped away and caustics applied,—chromic acid or sulphate of copper. In 1 case Zaufal applied Paquelin's cautery. Healthy granulations soon filled the spaces and, later, developed into cicatricial tissue. The lower portion of the wound is not closed after operation. When necessary, any openings which may remain can be closed subsequently by a plastic operation. It is claimed that only by such radical treatment can these masses be removed so that their recurrence will be prevented.

Alcohol, which is especially convenient and comforting in the hands of the patient, has, in our hands, proven a charming application, which shrinks, cleanses, and detaches the masses of macerated cuticle. We have learned to look upon it almost as a specific in so-called cholesteatomata.

*Necrosis of the Middle Ear and Conditions Resulting from Sclerosis.*—The pathology and therapy of the outer attic of the tympanum is discussed by Adam Politzer. <sup>113</sup><sub>Jan. 12</sub> The pathological conditions to be observed in this space are: (1) collections of serum and mucus, which may or may not be associated with catarrhal changes in the tympanic cavity; (2) connective-tissue development, with partial or complete filling up of Prüssak's space and of the upper part of the atticus externus; (3) adhesions between Schrapnell's membrane and the neck of the malleus, with complete disappearance of Prüssak's space. These last-named conditions are associated with immobility of the malleus and incus, and with more or less disturbance of hearing; (4) accumulations of pus in the attic and in Prüssak's space; (5) development

of round cells and free purulent exudation in the attic spaces, with partial or complete filling up of the attic with granulations; (6) perforation of Schrapnell's membrane, with its partial or complete destruction; (7) growth of polypi; (8) cholesteatomatous masses, with partial or complete destruction of the malleus and incus; (9) carious destruction of the margo-tympani; (10) development of fistulous tracts from the outer border of the attic to the upper wall of the external auditory canal.

When Schrapnell's membrane is perforated, and there exists a purulent discharge, the attic is to be washed out by means of solutions injected through Hartmann's canula. Watery solutions of resorcin (3 per cent.) are recommended; or, when the pus is foul, a solution of corrosive sublimate, 1 to 2000. A saturated alcoholic solution of boracic acid, 1.05 to 20, or tincture of iodine, or a solution of silver nitrate, 1 to 10, is to be dropped into the diseased space by means of the canula. In chronic cases the space is to be explored with a sound, and, if the malleus is necrosed, or if only a stump of it remains, which seems to interfere with hearing, this ossicle is to be removed. *This is the only indication for the removal of this bone.* Carious tissue is to be scraped away from the margo-tympani by means of the author's curettes, and the same instruments are to be used for the removal of granulations and polypi.

B. Alexander Randall, of Philadelphia, <sup>9</sup><sub>Sept. 27</sub> calls attention to the fact that perforations of Schrapnell's membrane are far from being uncommon lesions, although very often of small size, and covered in many cases by scales of dry epithelium or mucus. Removal of such obstructions will reveal the defect. A probe passed through such perforations will frequently detect denuded bone, even in cases supposed to be dormant. Inflammation and destruction of the mucous membrane leads rapidly to caries, as the mucous coat in the tympanum serves also as periosteum. The fibrous trabeculæ, so often described, prevent drainage into the tympanum proper, and pus may find its way between the superior wall of the external canal and its integument, escaping into the canal and forming a fistulous tract. Treatment consists in cleansing this tract, as already described. Blake's syringe can be used in place of Hartmann's. Peroxide of hydrogen, the twelve-volume solution being diluted with three to six volumes of hot water, is

the best cleansing agent. Weak solutions of silver nitrate or the mineral acids do not yield marked results. Boracic acid, in solution or in bulk, is favorably recommended.

The writer has not been well impressed by the results of Sexton's operation. In his own experience this operation serves a good purpose only in those rare cases where necrosis is absolutely confined to small surfaces, which can be completely excised. Stress is laid upon the importance of most thorough cleansing, and the necessity of applying treatment "not to the exfoliated products of the inflammation, but to the affected tissues themselves."

Schubert, of Nuremburg, <sup>328</sup><sub>May</sub> regards the operation of excision with more favor than the writer last quoted. After a long experience with cases of attic inflammation, Schubert has resorted to the operation of excision, and is well pleased with the results of this procedure. He finds that the hearing is not injured by the operation, but, in several carefully-tested cases, considerable increase was noted.

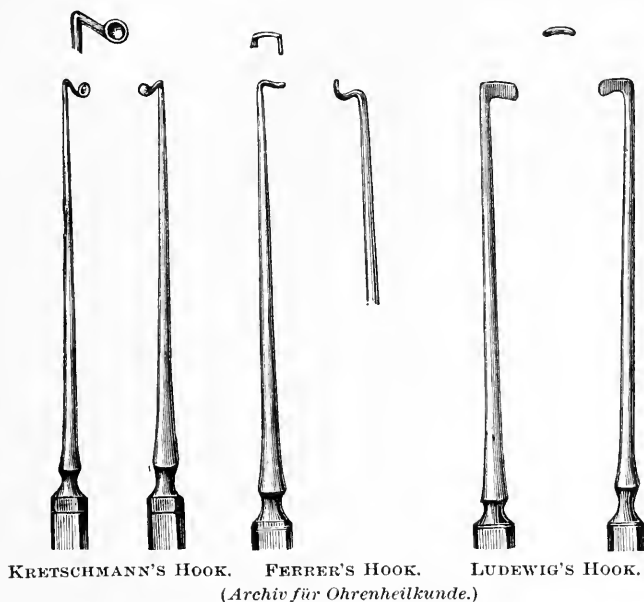
The many cases in which the incus has been found to be carious, its comparative uselessness after the removal of the malleus, and the continuance of otorrhœa in cases where a diseased incus is present, have led Ludewig, of the University of Halle, <sup>328</sup><sub>B.29,H.4</sub> to operate for its removal. This he has accomplished in 32 cases. The best method of operation has not yet, perhaps, been devised, but the author's procedure is as follows: The malleus is first to be removed, and Schwartze's method is followed. The details are already well known. A point of considerable importance is, that the incisions along the margin of the drum-head proceed from below upward, thus keeping the field of operation as free as possible from blood. A wire loop is passed about the manubrium, close to its head, and this ossicle and the membrane are removed together, great care being observed not to break the bone, as, in that event, the extraction of the head is a proceeding of much difficulty.

No regard is paid to the chorda tympani, the tearing of which has never caused more disturbance than a temporary loss of taste on the side of the tongue corresponding with the operation. Three different instruments have been tried as agents for removing the incus.



Kretschmann's instrument, with its sharp spoon, injures the mucous membrane, causes unnecessary hæmorrhage, and may even injure the facial nerve.

Ferrer, of San Francisco, present at the Halle clinic, devised a hook (see cut) which answered the purpose very successfully. The only objection to its use was the small size of its extremity, and the danger, in consequence, of forcing the incus into the additus ad antrum. This accident occurred during an operation, and was proved to be possible by a series of experiments made by Ludewig and Ferrer upon the cadaver. The author's instrument,



having a hook 5 millimetres in length and 2 millimetres broad, will not produce this dislocation, but is still not entirely satisfactory to the writer.

Kessel's method of chiseling the posterior wall of the auditory meatus, as a means of giving greater freedom of access to the ossicles, is not regarded with favor, as Ludewig fears the danger of injury to the stapes or to the facial nerve. After passing the hook of Kretschmann's, Ferrer's, or Ludewig's instrument over the body of the incus, the bone is easily dislocated and is extracted with a curved pincette. In the 32 cases reported the cause of the aural disease had been, for 21 patients an acute, contagious disease:—

Measles, . . . . .	10 cases.
Scarlatina-diphtheria, . . . . .	5 cases.
Scarlatina, . . . . .	1 case.
Diphtheria, . . . . .	4 cases.
Typhus, . . . . .	1 case.
Unknown cause, . . . . .	11 cases.
The incus, alone, was carious in . . . . .	11 cases (34 per cent.).
The incus and malleus were carious in . . . . .	16 cases (50 per cent.).
The incus was completely carious in . . . . .	27 cases (84 per cent.).
The incus was normal in only . . . . .	2 cases.

The condition could not be decidedly diagnosed in 2 cases. Paralysis of the facial nerve occurred in 2 patients after the operation; in both cases, however, the paralysis, treated by electricity, disappeared after seven or eight weeks. Injury to the facial nerve may be the result of imperfections in the walls of the canalis Fallopiæ, as imperfections in the walls of the tympanic cavity have been found by Friedlowsky and Zuckermandl. Another evil consequence which may follow the operation is a train of symptoms which resemble those of Ménière's disease, but are permanent instead of paroxysmal. Such a condition developed in 2 patients. The author finds the possible cause of this complication to be due to loosening of the stapedial-vestibular articulation, as similar phenomena occurred in a patient from whose ear the stapes was accidentally removed. It may also result from injury to the tympanic plexus, or from cocaine poisoning, as Kiesselbach has already proved to be possible. Reviewing the general results, it is found that—

Otorrhœa was healed in . . . . .	20 cases.
The drum-head was reproduced in . . . . .	5 “
The drum-head was not reproduced in . . . . .	15 “
Still under treatment, . . . . .	11 “
Died, . . . . .	1 case.

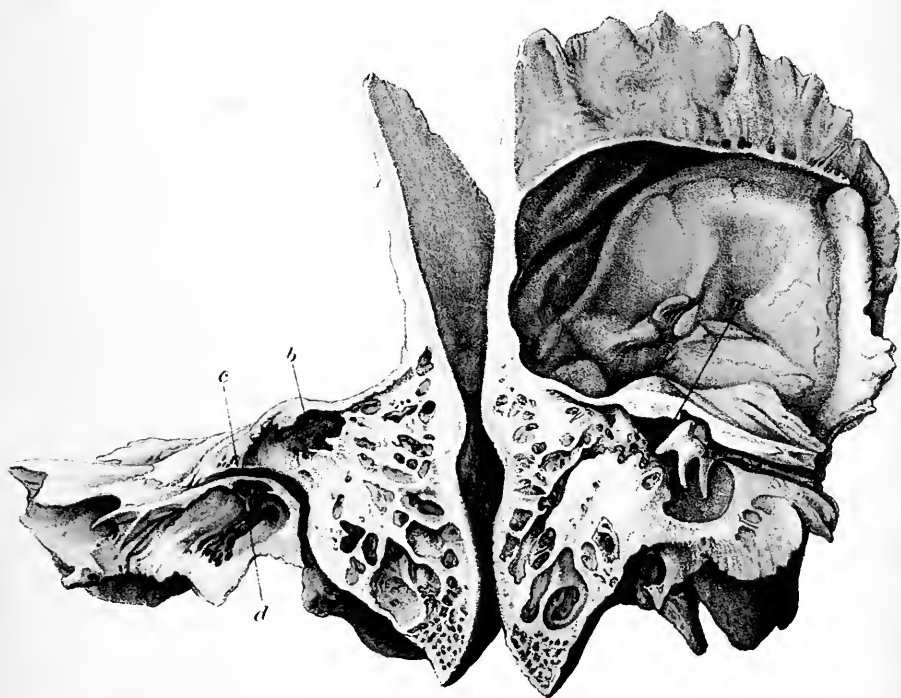
Death in this single case resulted from well-developed pyæmia, not as a consequence of the operation.

From the table giving the effect of this operation upon hearing, we find—

No increase of hearing in . . . . .	10 cases.
An increase of from 5 to 3 centimetres in . . . . .	8 “
An increase of from $\frac{1}{2}$ metre to 2 or $2\frac{1}{2}$ metres in . . . . .	11 “
Apparently, a loss of hearing in . . . . .	2 “

As many of these patients are still under treatment, the final results may vary from those already noted.

The accompanying plate gives a cross-section of the temporal



Caries and Extraction of Ossicles (Ludewig)  
Archiv für Ohrenheilkunde



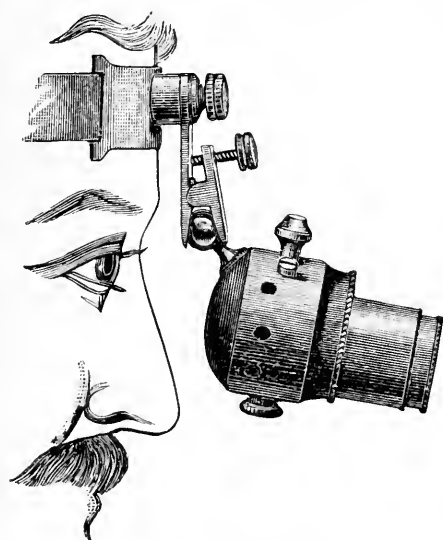
bone, and may serve to illustrate the relations of the parts involved. A, additus ad antrum ; B, antrum mastoideum ; C, canalis facialis ; D, stapes. A number of the diseased ossicles are also depicted.

In caries of the bony walls of the external auditory canal, of the walls of the tympanic cavity, and of the ossicles, Ole Bull <sup>345</sup><sub>Feb.</sub> has derived good results from applications of either sulphurous acid, nitric acid, or hydrochloric acid. The *rationale* of this procedure is to accomplish decalcification of the diseased bone. In this state it is removed by instrument with greater ease or is absorbed. The various acids were used, as a rule, in 4-per-cent. solutions. Cotton, saturated in such solutions, was placed carefully over the affected parts, and remained in position for twenty-four hours. In some few instances a single drop of strong nitric acid was applied by means of a glass probe. From a series of experiments conducted with various acids and sections of bone, the author found that hydrochloric acid was the one most rapid in action.

Charles H. Burnett, of Philadelphia, <sup>5</sup><sub>Feb.</sub> describes a case of *aural vertigo permanently relieved by excision of the membrana tympani and the malleus*. The patient was a lady, 31 years of age, who had suffered in childhood from otorrhœa. Deafness had been progressive, and to this condition had been added lately most distressing tinnitus aurium and vertigo. Examination of the deaf ear showed a white, thick, and flattened drum-head, without cicatrices, movable, except along the borders of the manubrium. The Eustachian tubes were pervious. As no improvement was apparent after a long-continued course of the usual forms of treatment, Burnett determined to remove the drum-head and malleus, in order to relieve intra-labyrinthine pressure. This operation was performed successfully, the *modus operandi* being the usual procedures employed for this purpose. The patient was kept under observation for one year after the operation. A new drum-head formed, but there was a complete cure of all the distressing symptoms. Hearing did not improve. Otorrhœa had been noticed, but was promptly checked by insufflation of boracic acid. This case teaches that (1) tinnitus and aural vertigo can be due entirely to disease in the middle ear, and therefore should not be referred always to a lesion in the internal ear ; (2) that the tinnitus and vertigo were evidently caused by the impaction of the stapes in the oval window and pressure on the labyrinth fluid induced by the

retracted malleus; (3) that the deafness which still exists is probably due to atrophy of the auditory nerve-fibres caused by this pressure; (4) that all the results of this operation were beneficial, and no relapse had occurred during sixteen months. Otorrhœa after the operation can be easily checked. A new membrane will almost invariably form, but, as this lacks retractive power, it will not cause a return of tinnitus and vertigo.

The new electric lamp devised by Samuel Sexton, of New York, <sup>2</sup><sub>Jan. 11</sub>, for the forehead, has enabled him to undertake more radical measures in aural surgery than those of former times. During the past three years he has operated frequently for the



SEXTON'S ELECTRIC LAMP.  
(*British Medical Journal.*)

removal of necrosed ossicles and the diseased drum-head in otorrhœa and sclerosing inflammation. In the former cases the drum-head is removed from the annulus and auditory plate by means of a small tenotome. Then, having loosened the attachments of the malleus and incus and separated the incus from the stapes, the two former ossicles are removed by forceps. Hæmorrhage is rare when the granulation tissue has been reduced previously by treatment. For sclerosing aural catarrh, the operation consists in de-

detaching the drum-head all around by a small tenotome, an opening being made for this instrument by means of a small, trowel-shaped knife, which may also be used to detach the fastenings of the malleus and to divide the tensor tympani. The tissues in front of the incudo-stapedial joint are next pushed aside with a blunt probe, oozing blood wiped away with cotton, and the joint then divided by the angular knife made for this purpose. The long arm of the incus is then secured by forceps and the bone removed. The malleus can be best secured by means of Sexton's foreign-body forceps. Hæmorrhage is slight, and can be arrested by pledgets of cotton-wool soaked in hot water. The patient should

be placed upon a restricted diet for several weeks before the operation, and after it should remain in bed for at least one day. If a new membrane tends to form, its edges can be "turned back," so to speak, by painting the membrane with collodion containing either salicylic or tannic acid.

*The treatment of progressive deafness (sclerosis) by tenotomy of the tensor tympani*, devised by Weber-Liel twenty years ago, has been again brought to the foreground by Cholewa. <sup>66</sup><sub>Apr., May</sub> He finds that in most sclerotic cases the perception of the vibrations of a tuning-fork, through bone conduction, is reduced about equally in both ears. In neuropathic sclerosis there is marked anæsthesia of the drum-head, the degree of insensitiveness being in direct ratio with the degree of failure in areal and bone conduction. This symptom of "equivalent anæsthesia" is of importance as a symptom, owing to the difficulty of diagnosing from the appearance of the drum-head, which, in cases of advanced neuropathic sclerosis, is often quite normal in appearance. 30 operations of tenotomy are reported, 5 of them being unsuccessful. It is noted that the operation often causes an increase in the hearing power of the *other ear*, while the one operated upon may not show any indications of improvement.

Miot <sup>136</sup><sub>Jan. 15</sub> gives a review of the pathological anatomy involved in those *fibrous changes of the middle ear which cause ankylosis and plastic adhesion*. It has been observed that such adhesive bands occur at certain situations within the middle ear with a certain degree of uniformity. For the destruction of such adhesions massage of the joints by instruments introduced into the tympanic cavity has been tried with some degree of success. Miot finds that manipulation of the handle of the malleus produces more movement at the foot-plate of the stapes when traction is exerted than by pressure. This is owing to the annular ligament of the foot-plate and to the stapedia muscle, whose normal movements such traction simulates. More movement still is produced by manipulation of the long process of the incus, and still more by direct manipulation of the stapes; but it is very difficult to reach these ossicles, and there is great danger of causing their disarticulation or of injury to the soft parts. Only under very rare circumstances should attempts be made directly upon the stapes.

*Sclerosis of the middle ear* is treated by Loewenberg, of Paris, <sup>69</sup><sub>July 10</sub> by the usual method of inflation. He warns against the danger of using excessive pressure in the tympanum, especially in that of a comparatively healthy ear or one but slightly affected by disease. In such cases the patient should close the meatus of such an ear with one of his fingers, thus making an air-cushion in front of the drum-head. Loewenberg accomplishes the same result by the use of his inflation-bag, which has a second tube extending sidewise from its opening, and ending in a rubber piece which is placed in the auditory meatus of the least affected ear. Inflation will then be sufficiently strong in the ear which requires it, while the other one is protected from overpressure. Loewenberg believes that he has discovered a symptom peculiar to sclerosis. This he describes as a sensation of heat—even burning—felt in the tympanic cavity after inflation. It is caused only when sclerosis exists. In other aural affections inflation causes a sensation of coolness. He believes that this sign seldom fails, and that its existence should warn the aurist to give a guarded prognosis.

At a meeting of physicians, L. Katz, of Berlin, <sup>69</sup><sub>Oct. 2</sub> presented a temporal bone showing *bony ankylosis of the foot-plate of the stapes*. The specimen was from the head of a patient who had been deaf for many years, and the diagnosis had been made correctly some time before her death. The foot-plate of the stapes was increased to almost four times its normal thickness and was united to the adjoining tissues by inflammatory products, which altered completely the usual appearance of this joint. Such cases are apt to be of rheumatic origin. The subjective symptoms begin as a faint tinnitus long before there are any noticeable signs of deafness. For this reason the subjective noises are often diagnosed as the result of hyperæmia or of anæmia of the brain. Treatment would seem to be best accomplished by the removal or loosening of the stirrup-plate, but this operation, seldom attempted, has usually been a failure, owing to its extremely difficult technique, the frailty of the parts involved, and the real danger of the procedure. Inflation of the tympanic cavity seems to increase rather than relieve the symptoms. Some result may be expected from the use of the pneumatic speculum. As to therapeutics, the writer considers potassium bromide, administered in large doses, to



be the most valuable agent among the many drugs recommended for the relief of tinnitus.

Observing the remarkable effects of *the continuous current in the treatment of fibrous growths*, elsewhere, notably Apostoli's treatment for uterine fibroids, and considering the well-proved sorbefacient effects of galvanism, E. L. Jones, of Florence, Ala.,<sup>61</sup> July 12 has tried and has been well pleased with the effects of its use in sclerosing inflammation of the ear. The "electrolytic qualities" of the current upon living tissue is most manifest at the *negative* pole. The writer has devised an insulated rubber speculum with handle, through which appliance runs a conducting wire. This is attached to the negative pole, and the patient, inclining the head so that the ear to be treated is uppermost, the meatus is filled with warm salt-water, and the speculum is introduced. If the Eustachian tube is pervious, the positive pole, attached to an ordinary sponge electrode, is pressed under the angle of the jaw of the opposite side. If the tube is not freely open, he uses an electrode consisting of a hard-rubber Eustachian catheter with a copper wire running through it. These are introduced in the ordinary way, and the catheter is withdrawn about  $\frac{1}{2}$  inch, leaving the wire in the Eustachian tube. The current is then started and continued until a slightly burning sensation is produced, the application lasting from five to ten minutes. The treatment should be employed as frequently as possible. The writer claims that very remarkable and satisfactory results have followed this procedure.

*In diseases of the Eustachian tubes and middle ear*, Cheatham, of Louisville,<sup>663</sup> Jan. speaks highly of the bougie. He employs celluloid bougies, which, being light in color, are stained by blood. If there is any indication of bleeding after their use, he does not employ inflation at that visit, but defers it until the next one, thus avoiding the danger of causing emphysema. He refers to 2 cases in which tinnitus and vertigo were most pronounced symptoms. In both patients it was impossible to force air into the tympanic cavity. Finally, he "bougied" the tubes, after which the introduction of air was easy, and the patients improved rapidly. He admits that the operation requires great care, but he has never had any bad results, and the operation, although not general in this country, is a very common one in Europe.

*Pathology and Bacteriology of Diphtheritic Inflammation of the Middle Ear.*—Moos<sup>4</sup><sub>Dec. 2, '89</sub> has made observations upon 6 cases, 3 of diphtheria of the throat and 3 of diphtheria and scarlatina. The patients varied in age from 2 to 7 years; course of illness, from two to eighteen days. None of the cases showed perforation of the drum-head, and in 2 only was a thick fluid found in the tympanic cavity. A microscopic examination of the walls of the labyrinth exhibited partial necrosis of the mucous membrane, development of fibrous tissue, destruction of the periosteum, and necrosis of bone. Degenerative processes were apparent in the tensor tympani and stapedius muscles and in the acoustic and facial nerves. In addition, colonies of streptococci and other micro-organisms were found in the vessels, the connective tissue, and in the walls of the tube. The writer doubted if it were possible to prove a relationship between any special micro-organisms and the course of the inflammation.

*Extravasation in the Nerve-Sheath of the Chorda Tympani in Diphtheria of the Tympanic Cavity.*—Kirchner<sup>814</sup><sub>May 10</sub> reports a case in which the mucous membrane covering the chorda was greatly thickened and infiltrated with round cells, especially in the vicinity of the numerous vessels. At a point between the epithelial layer and the nerve-sheath there was a circumscribed infiltration of small cells, in the centre of which necrosis had already commenced. This infiltration had penetrated into the circumference of the sheath of the nerve. Weigert's coloring method revealed—as it did also slightly for the drum-head—an infiltration of fibrous threads and cocci in the mucous covering and sheath of the chorda.

#### MISCELLANEOUS.

*Aural Disease and Epilepsy.*—C. L. M. Iredell<sup>1000</sup><sub>Jan.</sub> reports 4 cases in which suppurative disease of the middle ear existed in conjunction with epileptic or epileptiform conditions. In 3 of these cases polypi grew from the tympanic wall. In 2 cases there were marked symptoms of grave mental disturbance. All of these patients who submitted to aural treatment were decidedly benefited. The writer points out the probability that, in this class of cases, there exist varying degrees of chronic meningitis, such conditions being increased or lessened in severity by the changing grade of aural inflammation. Accordingly, he believes that thorough

examination of the ear should be made in all cases of epilepsy where the exciting cause has not been determined.

*Hæmorrhage Following Paracentesis of the Membrana Tympani.*—Ludewig, of Halle,<sup>328</sup><sub>Jan.</sub> reports this accident, which resulted from wounding the bulb of the jugular vein, and occurred in a patient of the Halle Ear Clinic,—a boy 5 years of age. The child suffered from chronic catarrh of both ears. The posterior inferior segment of one drum-head showed a bluish tinge, in front of which a yellowish line marked the limit of an exudation. A small incision allowed the escape of a clear, yellow, serous fluid; this incision was then enlarged, the paracentesis knife being used instead of the probe-pointed knife. A sudden gush of blood came from the lower border of the drum-head, and before the ear could be tamponed the child had lost 32 ounces of blood. The tampon and a firm bandage finally stopped the hæmorrhage. The parts healed, and the bandages were removed on the eighth day. No bad symptoms followed, and the child's hearing has remained normal. A second accident of this kind is reported by Hildebrandt.<sup>328</sup><sub>B.30,H.8</sub> The patient was a rachitic child, 4 years of age, who had suffered, when 1 year old, from measles, which caused purulent otitis of both ears. Otorrhœa had ceased when the case was seen by Hildebrandt. The patient then appeared to have a serous exudation in the right tympanic cavity. The paracentesis needle was introduced into the posterior-inferior quadrant of the right drum-head. A heavy stream of dark-colored blood immediately poured from the cut, the stream being as thick as a small finger as it flowed from the meatus. Hæmorrhage was controlled by tampons of cotton, which were undisturbed for two days. Upon removal of the pledgets the wound in the drum-head was found to have closed. No evil resulted from the accident.

*Imperfections in the Fossa Jugularis.*—These accidents have led Alfred Müller<sup>328</sup><sub>B.30,H.3</sub> to make a careful study of the imperfections which occur in the fossa jugularis, and he finds a great variation in the form and dimensions of this cavity. When shallow, there is usually a thick wall of bone between this fossa and the tympanic cavity, but in deep fossæ this wall is transparent, or even open in some cases. Out of 100 specimens the author observed this transparent thinness in 15 skulls, and found imperfection of the wall in 13 skulls. The existence of such conditions points to a

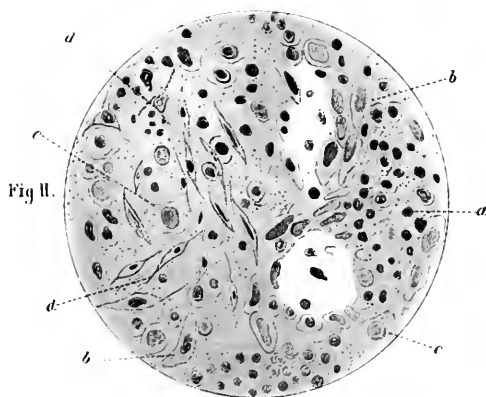
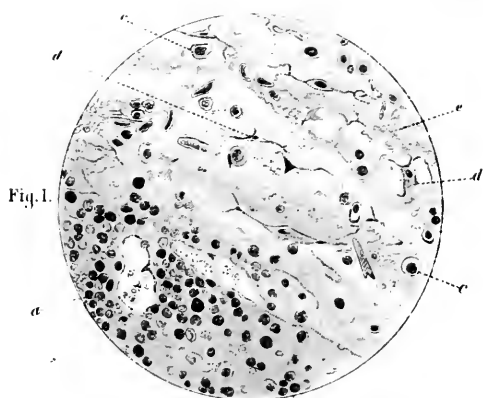
danger attending paracentesis of the drum-head which has not been, perhaps, heretofore sufficiently realized.

*Dangerous Middle-Ear and Mastoid Inflammation Following Treatment of the Naso-Pharynx.*—J. L. Thompson, <sup>61</sup><sub>Dec. 21, '99</sub> of Indianapolis, reports 20 cases illustrating this complication. In 14 of these cases suppurative otitis was produced; mastoid inflammation developed in 4 cases, 2 of which terminated fatally. The writer gives the following conclusions: 1. The condition of the ears should be ascertained before attempting any treatment for the nose or throat. 2. Surgical procedures should not be undertaken or caustic applications made during an acute inflammation of the nose or pharynx. 3. Patients should be directed to report to the operator immediately upon the appearance of the first twinge of pain in the ear. 4. The operator should be prepared to leech such cases early or to puncture the drum-head, and should not delay to open the mastoid cells when such procedure is indicated. Like tracheotomy, this is often done too late.

*Cocaine in the Middle Ear.*—Trifletti, of Naples, corresponding editor, reports that Fiano <sup>505</sup><sub>Oct. 20</sub> records the production of toxic symptoms which developed in a lady 45 years of age, into whose ear a few drops of 5-per-cent. solution of cocaine were injected through the Eustachian tube. The patient, soon after, complained of the sensations of seasickness. These lasted until the following day. Fiano believes that the drug produced anæmia (ischæmia) of the labyrinth and mucous membrane of the tympanic cavity by its local action upon the circulation.

*A case of sarcoma of the tympanic cavity and mastoid process* is reported by R. Haug, of Munich. <sup>328</sup><sub>May</sub> The patient, a woman 18 years of age, had suffered, since childhood, from occasional attacks of otorrhœa. The growth of a neoplasm seemed to date from an injury to the affected ear, caused by the prick of a hair-pin. At the seat of injury a small growth appeared, which was removed by means of forceps. It recurred rapidly, and was four times destroyed by the same means as used for the first growth. Considerable hæmorrhage occurred at each operation. Pain was slight until the growth began to project beyond the external meatus. A swelling now appeared beneath the jaw and over the mastoid process of the same side. At this latter point the skin was soon broken and a spongy mass appeared, which bled freely





Sarcoma of the Tympanic Cavity (Haug).  
Archiv für Ohrenheilkunde

upon slight irritation. An attempt to remove these growths was made by means of sharp curettes, hæmorrhage being controlled by a thermo-cautery. The results seemed favorable, but, six weeks after the operation, the growth re-appeared and within two months increased to its original size. The patient became emaciated, facial paralysis developed, and death soon resulted from meningitis. Eleven months only had elapsed between the first attempt at removal of the primary tumor and the patient's death. Microscopic examination of the growth proved it to be composed of spindle-cells, many with large nuclei, myxomatous tissue, and everywhere an extensive infiltration of small round-cells. In deeper portions of the growth, where the spindle-cells predominated, appeared spaces lined with cylindrical epithelium, the cells being longer than those of ordinary glandular tissue. This formation suggests the earlier presence of a myxo-sarcomatous polypus, subsequently taking a malignant character, as shown by the dense infiltration of round-cells, which had taken the place of the former myxomatous tissue. The accompanying plate illustrates three sections from this growth. Explanation of plate: Figs. 1 and 2.—Sections from a peripheral and central portion. A, small round-cells; B, larger, spindle-form cells; C, larger cells with distinct round nuclei; D, myxomatous cells; E, stroma. Fig. 3.—Longitudinal section through a glandular duct, with a double lining of cylindrical epithelium.

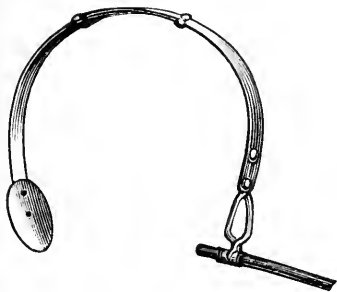
*Lesions Confined to the Middle Ear in a Case of Ménière's Disease.*—Lannois<sup>328</sup><sub>May</sub> made an examination of both temporal bones of a patient who had suffered from this condition, and found the lesions of advanced sclerosis of the middle ear, degeneration of the ossicular joints, and fibrous adhesions. The inner ear was normal. The author believes that this case proves that the symptoms of Ménière's disease do not—as has generally been believed—always indicate an affection of the labyrinth.

*A Holder for the Auscultation Tube.*—L. Katz, of Berlin,<sup>328</sup><sub>May</sub> has devised the apparatus shown on next page as a means of holding the end of the ordinary auscultation tube in the patient's external meatus. Following Schwartze's suggestion, that hard rubber or ebony ends for such tubes tend to weaken the sounds of the air-blast, Katz dispenses with such ends, and finds his holder of great service in maintaining the soft-rubber tube in position. The holder is made of two strips of metal, and is adjustable to any head.

*A New Method of Compressing Politzer's Air-Bag.*—Trifletti, of Naples, corresponding editor, reports that Dionisio <sup>736</sup><sub>Aug. 15</sub> recommends that a long rubber tube be attached to the ordinary air-bag, so that the latter can rest on the floor and be compressed by the foot, thus enabling the surgeon to use both hands freely.

#### MASTOID PROCESS.

*Primary Mastoid Periostitis.*—S. C. Ayres, of Cincinnati, <sup>66</sup><sub>v. 19, Nos. 2, 3</sub> notes 2 cases of this very rare condition. In 1 case the patient had formerly suffered from otorrhœa, but this had long ago ceased; in the other case there had never been any aural disease. In both cases there was pain over the mastoid process, then swelling and fluctuation. Incisions allowed the pus to escape, after which the inflammation subsided.



KATZ'S AUSCULTATION-TUBE  
HOLDER.  
(*Archiv für Ohrenheilkunde.*)

Boerne Bettman <sup>779</sup><sub>Dec., '89</sub> advocates the practice of making *small* incisions, not longer than  $\frac{1}{2}$  inch, into the pus-cavity, as near as possible to the insertion of the auricle. These he prefers to the usual large and deep incisions. The wound can be kept open by a drainage-tube or lint. This method cannot be adopted in cases where necrosed bone must be removed.

J. Orne Green, of Boston, <sup>5</sup><sub>Dec.</sub> divides inflammation of the mastoid into four classes:—

Class I. This includes cases in which there was no extension of the inflammation to neighboring parts; neither œdema, swelling, nor redness. Pathologically, this class is subdivided into (*a*) simple suppuration of the mucous membrane of the interior of the mastoid; (*b*) suppuration of the diploë of the bone; (*c*) caries and necrosis of the interior of the mastoid; (*d*) osteosclerosis.

Under this class are recorded 11 patients, exhibiting fourteen pathological phases.

Class II includes the cases in which there was an extension of the inflammation outward through the external cortex. The subdivisions are (*a*) subperiosteal abscess, the cortex firm and imperforated; (*b*) caries of the cortex; (*c*) caries of the cortex and necrosis of the interior; (*d*) caries of the cortex and caries of the interior.



Under this class are recorded 51 patients and fifty-eight pathological phases.

Class III. Where the inflammation extended forward through the anterior wall of the mastoid, which forms the posterior wall of the osseous meatus. The subdivisions are (*a*) suppuration of the diploë of the bone; (*b*) caries of the cortex.

Under this class are recorded 5 patients and five pathological phases.

Class IV. Where the inflammation extends downward through the base of the mastoid. The subdivisions are (*a*) subperiosteal abscess of the base of the mastoid without caries of the cortex; (*b*) the same location of abscess, with caries of the cortex; (*c*) cellulitis of the neck; (*d*) osteosclerosis of the bone, without pus, either subperiosteal or intra-mastoideal; (*e*) phlebitis of the external jugular vein.

Under this class are recorded 13 patients, and sixteen pathological phases. Two other classes are noted which did not occur in the writer's list of cases, viz.:—

Class V. Where the inflammation extends inward through the inner wall of the mastoid.

Class VI. Where the inflammation extends upward through the roof of the mastoid.

He analyzes 80 operations, with the following results of treatment:—

Cured (the term is used in its strictest sense),	. . .	62
Not cured,	. . . . .	3
Died,	. . . . .	7
Unknown,	. . . . .	2
Unfinished,	. . . . .	6

The 3 uncured cases now show carious and open fistulæ. Of the fatal cases, 5 had symptoms of meningitis (severe) at the time of operation; 1 had bilateral mastoiditis, but an operation was not permitted until too late; 1 died, eleven days after the operation, from purulent meningitis.

Out of 93 cases (several individuals among the 80 patients presented double lesions, which thus cause an apparent discrepancy in the totals) pus was found in 89; not found in 2 (osteosclerosis); the cortex was normal in 75; there was osteosclerosis in 16.

The writer advocates operative procedures in all the conditions included in his classification. Even when no external signs

of inflammation are apparent, pus was found in 12 out of 14 cases. Where subperiosteal abscess exists, it is his belief that the cells should also be opened, for they are usually involved, and in most instances a second operation will be required if the opening is delayed. In such cases the bone is usually thin. An exception is made to this rule in the case of young children. For them the evacuation of the abscess seems to be sufficient.

The simplest cases are those presenting fistulous tracts,—47 per cent., in the writer's list,—which can be readily followed as guides in opening up the cells. Such cases may present very little external swelling, or the œdema may be intermittent. This latter phenomenon, in the writer's experience, always indicates the existence of a carious opening. The most serious cases were found among those included in Class III,—20 per cent. In operating upon such, the surgeon is troubled by much bleeding, and it is difficult to find the small amount of pus usually present. Class IV furnished the greatest number of deaths, 3 out of 5 cases; while all the other classes together gave but 4 deaths out of 74 patients.

Of the usually noted symptoms of mastoiditis, the writer lays especial stress upon pain in the mastoid process, elicited by firm pressure; œdema of the upper posterior wall of the meatus, close to the drum-head, although this may also indicate inflammation of the antrum; œdema of the external tissues does not always indicate the existence of pus. Fluctuation is an uncertain symptom, owing to the density of the tissues involved. Continuance of otorrhœa after all apparent causes have been removed. The interior of the bone cannot be diagnosed from its external appearance. A large, well-developed bone is usually pneumatic. The osteosclerotic cases were all associated with chronic inflammation.

In operating, the author discards trephines and employs the gouge and mallet. With these the bone is opened, while the dental engine, always armed with burrs instead of drills, is used to enlarge the opening and to clear away a carious surface in the interior. It must be used for short intervals, in order to avoid overheating of the tissues. Rubber drainage-tubes are used exclusively. The usual antiseptic precautions of modern surgery are observed at the operation and during the after-treatment.

*Affections of the "Petro-Mastoid."*—C. Barek, of St. Louis, 663 Oct.

in this report of 20 operative cases, lays much stress upon the shape of the skull as a means of determining the position of the sigmoid fossa. He quotes Koerner, of Frankfurt, whose long series of observations shows that this fossa varies in brachycephalic or dolichocephalic heads, *i.e.*, long heads or broad heads. A comparison of two lines determines the respective types,—one line drawn from the bridge of the nose to the occipital protuberance, the other between the parietal protuberances. Koerner's "index" is obtained by dividing the first measurement (longitudinal) by the second (transverse). In pronounced "broad heads" this index ranges from 1.55, while in "long heads" it may be as low as 1.07. "The more the antero-posterior and the transverse diameters are equal, the deeper and nearer to the field of operation is the lateral sinus." This rule is not of such importance when children are to be operated upon, as the sinus deepens during the development of the skull. Barck uses chisels, and, in cases giving a dangerous "index," keeps close to the posterior wall of the auditory canal, while he makes his funnel-shaped opening as small as consistent with circumstances. In most cases he exposes the bone by means of a triangular flap. In his opinion drainage is best secured by using lead-wire instead of rubber drainage-tubes. The latter become compressed, closed, and fail to fulfill their mission.

A. Hartman, of Berlin, <sup>4</sup><sub>Dec. 9, '99</sub> considers *the anatomical conditions to be considered in chiseling the mastoid process.*

When the cells are opened in the usual way, at a point 1 centimetre behind the spine, above the external meatus, Politzer and Schwartze claim that the facial nerve and horizontal semicircular canal are reached at a depth of 25 millimetres. In sections made from 50 temporal bones by Hartmann, the transverse cut being made on a level with the centre of the external auditory canal, it was found that the distance to the horizontal semicircular canal was 21.5 millimetres; to the facial canal, 22 millimetres, and, in certain cases, only 17 millimetres. When a deep opening must be made, especially for reaching the upper part of the tympanic cavity, Hartmann recommends the removal of the bony layers of the auditory canal (the pars ossea of the drum-head), using, for this purpose, a double chisel. This space can also be reached by widening the antrum by chiseling; and, finally, if the entire forward wall of the antrum and pars ossea of the drum-head be removed, the choice

of a method of operation depends upon the pathological condition of the attic.

*The Petro-Mastoid Cells.*—As a result of observations by A. Ricord,<sup>100</sup><sub>Feb. 23</sub> it was found that the cells adjoining the tympanic cavity are the ones first developed in early childhood, and that, through life, they are more apt to be in direct communication with the tympanum than are the cells of the mastoid proper. Owing to this fact, and to the proximity of the lateral sinus, the writer regards the posterior cells of the mastoid as a most undesirable field for operation. His method is to incise the skin along the line of attachment of the auricle; to draw the latter forward, thus exposing the mastoid process, and to open the bone by hollow chisels, keeping close to the auditory canal and not penetrating to a greater depth than 12 to 15 millimetres. The facial nerve and semicircular canals will thus be avoided.

*Operative Treatment of Caries of the Temporal Bone.*—Jacoby, of Breslau,<sup>328</sup><sub>Oct., Dec., '89</sub> reports, as a result of operative procedures, 20 cases of caries of the temporal bones as having been cured. The duration of the mastoiditis had varied from a few weeks to ten years, and the time required for its cure from six weeks to three years. Chiseling was the method usually adopted for opening the cells. All of the cases had resulted from inflammation of the middle ear, but cholesteatoma existed in 3, 2 of which cases required the longest courses of treatment and 1 of which terminated fatally from meningitis. Permanent facial paralysis occurred in 1 case. In many of the patients there was very extensive necrosis of the temporal bone, causing the formation of fistulæ.

*Wounding of the transverse sinus* is reported by Jul. Boke.<sup>84</sup><sub>May 17</sub> This accident occurred during an operation (chiseling) for opening the mastoid cells. Hæmorrhage was stopped by a tampon and external pressure. Two days later all bleeding had ceased and the sinus could be seen pulsating in the fundus of the wound. Eighteen days later the wound had become covered with healthy granulation tissue.

*Treatment After Opening the Mastoid.*—Kreitschmann, of Magdeburg,<sup>41</sup><sub>Sept. 18</sub> does not close the wound in the soft parts. He leaves the first dressing untouched as long as possible, maintaining drainage in the auditory canal. His irrigating fluids are solutions of sodium chloride.

A new mastoid retracting speculum and retractors are described by Frank Allport.<sup>59</sup>  
Dec. 7, '89

Fig. 1 represents the former of these instruments. It effects complete separation of the two flaps, thus allowing freely for work upon the bone. As it is self-retaining, its use avoids the necessity for having an assistant to hold the wound open. By its pressure against the edges of the incision, it aids in the stoppage of hæmorrhage. When closed, its jaws lock so closely that they can be placed readily in the line of a narrow cut. By screwing down the screw-button the jaws are separated. Fig. 2 is Allport's modification of the ordinary mastoid retractor. Two of these retractors must, of course, be used, and an assistant is required to hold them.

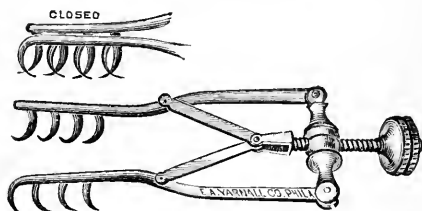


FIG. 1.—MASTOID RETRACTING SPECULUM.  
(Medical Record.)

#### INNER EAR.

A case of acquired deaf-mutism, with section, is described by P. C. Larsen and Holger Mygind.<sup>328</sup>  
B. 30, H. 4 The patient was a man 27 years of age. His family history was excellent, there being no suggestion of any inherited causes for his condition. When 2½ years of age he suffered from a prolonged illness, the reported symptoms of which suggest those of cerebro-spinal meningitis.



FIG. 2.—ALLPORT'S MASTOID RETRACTOR.  
(Medical Record.)

During the course of this illness he lost his hearing and has since been absolutely deaf, losing also the power of speech. He was educated at an institution for deaf-mutes; learned the trade of cobbler; married a deaf-mute; had one child, whose hearing and speech are normal; and died in 1889 from general tuberculosis (lungs and abdominal cavity).

Post-mortem examinations of his temporal bones showed very slight changes in the middle ear of both sides. The right temporal bone is described, as the left resembled it closely. The stapes was

bound to the oval window by connective-tissue bands, extending also to the parts about the window. The base of the stapes had disappeared. The fenestra ovalis was altered in shape, being greatly narrowed and reduced to a long fissure. The semicircular canals had entirely disappeared, their place being occupied by compact bony masses. The cavity of the vestibule was contracted and altered in form, and all traces of its membranous contents were lost. The entrance to the scala vestibuli was almost obliterated. All that remained of the cochlea was a trace of its first coil, the interior of which was filled with sclerotic, bony masses. Two small spaces were all that remained of the scala tympani and scala vestibuli, the walls of which were composed of ivory-like bone, which was thick at the periphery, while inward, toward the axis of the cochlea, it resembled a thin, bony plate. The internal auditory canal appeared to be normal, and the facial nerve was unchanged. All traces of the maculæ cribrosæ, medial and inferior, had gone. The changes in the acoustic nerve were of two different characters,—(a) a complete atrophy of the nervous elements and (b) hyperplasia of the neurilemma. Fine threads of connective tissue appeared to be all that remained of the nervus vestibuli.

The brain did not show any signs of inflammation, but the inferior frontal convolution on the *left* side and the adjoining convolutions of the island of Reil were decidedly lower and smaller than those of the right side. Otherwise the brain was quite normal. The authors believe that this variation of the frontal convolutions was due to atrophy from inactivity, as a result of deaf-mutism.

The case shows the possibility of grave changes occurring, as the result of inflammation, within the inner ear, while little alteration occurs in the middle ear; and that the inflammatory changes and products will remain, as such conditions remain in the other parts of the bony system, viz., sclerotic bony tissue, chalk deposits, or connective-tissue growth. Very similar post-mortem changes following an inflammatory process have been found by Rudinger<sup>1034</sup><sub>p.27</sub> and Waldschmidt<sup>295</sup><sub>B.52,p.374</sub>; also by Schwartz, Moos, Mackeprang, Ibsen, Bochdalek, and Politzer.

The case just reported is of especial interest in connection with an important paper by Holger Mygind.<sup>328</sup><sub>May</sub> A series of cases,

extending over many years and reported by many observers, is collected and tabulated, showing the changes in different parts of the aural apparatus in deaf-mutes. The histories of 118 cases are thus given, but, unfortunately, no definite conclusions in regard to a systematic pathology can be drawn from them. They show that lesions in any part of the auditory apparatus may produce deaf-mutism, but the pathological changes vary from an *apparently* slight degree of abnormality to most extensive and general alteration. Great difficulty is found in distinguishing



FRACTURE OF THE TEMPORAL BONE AND CONCUSSION AS A CAUSE OF DEAFNESS.  
(*Buffalo Medical and Surgical Journal.*)

primary lesions from secondary,—the changes produced by actual inflammation from those resulting from disuse. This uncertainty is most manifest in estimating the alterations in the acoustic nerve. The article will, doubtless, be of service for future observers.

*Fracture of the Temporal Bone and Concussion as a Cause of Deafness.*—Laurence Turnbull, of Philadelphia,<sup>170</sup><sub>Aug</sub> had a patient, a boy 13 years of age, who was struck on the left side of the head by an iron bar projecting from a locomotive. The skull was fractured, the fracture involving the frontal and parietal bones, but not the temporal. After removal of spiculæ of bone the wound

healed promptly, but the boy has been absolutely deaf since the receipt of the injury. The illustration is from a tin-type, the view of the head being reversed. It really represents the left side, and the white spot indicates the area of the fracture. Hearing, before and after the air-douche is *nil*; bone conduction is not perceived. The drum-head of the affected ear is much retracted and there is evidence of a deposit of blood on its posterior surface. The left drum-head is also retracted. A prolonged course of treatment, consisting of pilocarpine hypodermic injections,  $\frac{1}{20}$  grain (0.0032 gramme), increased to  $\frac{1}{10}$  (0.0065 gramme) and  $\frac{1}{8}$  (0.0081 gramme), together with the usual methods employed to render the drum-head movable, has not effected any improvement in hearing.

*Unrecognized Lesions of the Labyrinth.*—Alexander Ogston<sup>22</sup><sub>June 11</sub> states that in gouty cases a train of symptoms suddenly arises, resulting from serous effusion into the labyrinth, and giving most of the characteristics of Ménière's disease, tinnitus and deafness, especially for tones of high pitch, being intense. The musical sense is lost. Vertigo is made worse by jars to the body and by sudden noises. The attack disappears, but recurs with ever-shortening intervals of health, and produces progressive impairment of hearing. A point of differential diagnosis between this condition and a simple catarrhal process is that, in the latter, there exists an inequality in hearing between the two ears, caused by thickened mucous membrane in excess in one ear, which muffles the vibrations of sound and produces an impure or tremolo note. In labyrinth effusion, the conducting apparatus being unaffected, the note will be heard as one clear sound. In the treatment the air-douche must not be used. The patient is to be kept in a recumbent position in a quiet room, and the ears must be closed with cotton-wool so as to deaden all vibrations. General regimen must be adopted to combat the diathesis. Iodide of potassium has been found to be useless, but fair results have followed the hypodermic use of pilocarpine.

*Ménière's Vertigo and the Semicircular Canals.*—Steiner, of Cologne, believes that loss of the sense of equilibrium results from lesions within the brain or its membranes, causing alterations of pressure. His experiments upon the results of destroying the canals in sharks, frogs, and lizards, where the canals can be de-



stroyed without injury to the brain, showed no effect upon equilibrium. Politzer and Lucae both report cases in which the semi-circular canals were absent or were filled with blood-clots, yet there had been no loss of equilibrium.

*Tinnitus Aurium as a Nerve Reflex.*—Amand Routh <sup>26</sup><sub>Jan.</sub> reports 2 cases of severe tinnitus aurium as a reflex condition from pelvic irritation, mucous polypi, and erosions about the external os of the uterus. Cure of these pelvic troubles caused an immediate disappearance of the tinnitus.

*Involvement of the Acoustic Nerve in Nephritis.*—Gr. Gradenigo <sup>37</sup><sub>Sept.</sub> gives notes of such a case. The nephritis developed synchronously with retinitis, producing only slightly marked functional disturbance. Changes in the peripheral ends of both optic and acoustic nerves have been demonstrated by the author, in a former paper, <sup>37</sup><sub>July, '89</sub> as a result of cerebral tumors. Such growths, by causing increase of endo-cranial pressure, interfere with the nutrition of these nerves at their peripheral ends. Such alterations occur, usually, without marked functional symptoms. In the ear they are best demonstrated by the electrical test. Because functional symptoms cannot be demonstrated, they may still exist, as alterations in anatomical structure can undoubtedly produce symptoms so slight as to be incapable of demonstration by any means, at present, at our command.

*Paralysis of the Facial Nerve and its Effect upon Hearing.*—Gouguenheim, of Paris, our corresponding editor, reports that Gellé has made a study of 20 or 30 cases of facial paralysis, which occurred in patients suffering from otitis during attacks of influenza. The vicinity of the nerve and the thinness of the partition-walls of its canal will account for the pathogenesis of this complication. To these circumstances must be added the fact that periostitis was a frequent consequence of the intense inflammations of the middle and inner ear in influenza. Loss of hearing, which was an accompanying condition with the paralysis, was not found to be due to the paralysis of the facial nerve.

#### HEARING.

*Test-Words for Hearing, and their Value in Differential Diagnosis.*—O. Wolf, of Frankfurt. <sup>66</sup><sub>v.19,p.298</sub> advises the use of words containing consonant sounds as being the best qualitative and

quantitative tests for hearing, and has constructed a table setting forth systematically the pitch and strength of tone of vocal sounds. He shows how the different changes in the sound-perceiving and the sound-conducting apparatus perceive the consonantal sounds either well, poorly, or not at all, according to the seat and character of the affection. The use of the tuning-fork is not superfluous, but is tedious, requires much time, and is inefficient for patients who have no sense of musical sounds. He divides the test-words into three groups: the acute and intense S, Sch, and G soft, the explosive sounds of medium pitch and intensity, and the sounds of R. The changes and alterations which these consonants undergo in the perception of the patient under examination indicate his lesions.

*Edison's Phonograph as an Acumeter.*—L. Lichtwitz<sup>88</sup><sub>No. 47, '89</sub> reports that further trial of the instrument recommended last year as an acumeter encourages the belief that, eventually, it will be a most valuable test for hearing. The systematic arrangement of a fixed and standard scale of sounds, the constancy of the tones, the ability to increase the strength of a tone without altering its quality, the freedom from interference by surrounding noises, and the possession of a common test which can be referred to by all aurists as the standard are advantages which it offers over all other methods of testing.

*Bezold's instrument for testing hearing*<sup>34</sup><sub>July 15</sub> has now been perfected, and includes from nine to ten octaves of an unbroken scale. The sounds are produced by eight tuning-forks and three pipes. The inventor emphasizes the importance of exact examination as to the perception of the lowest tones of the scale. He has demonstrated by his instrument that the sound-conducting apparatus allows only the passage of sound-waves of the lowest part of the scale. He believes that the instrument will aid in the construction of an entirely new functional symptomatology.

*An Apparatus for Enabling Deaf Persons to Hear Public Speakers.*—By a device similar to one invented by C. J. Blake, Francis H. Brown, of Boston,<sup>99</sup><sub>Feb. 27</sub> has enabled several deaf persons to hear a church service. The apparatus consists of a trumpet-shaped tin sound-receiver, turned toward the speaker. Its lower end fits into the opening of a common tin speaking-tube, which passes downward to, and then under, the floor, to the seat occupied by the deaf person.

# DISEASES OF THE NOSE AND ACCESSORY CAVITIES.

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AND

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## ANATOMY AND PHYSIOLOGY.

*The Bursa of Luschka.*—Poelchen, of Königsberg, <sup>20</sup><sub>B. 119, p. 118</sub> gives the results of his studies on the cadaver, with especial reference to the pharyngeal bursa of Luschka. He concludes that in the middle of the naso-pharynx is a spot differing from those in its vicinity in its special anatomical peculiarities. This spot is in most cases a cavity, or *foramen cæcum*, corresponding to the space between the insertion of the rectus capitis anticus of either side. The mucous membrane lines this depression and at this particular spot is very adherent. If the adenoid tissue is hypertrophied the recess cannot be seen. During deglutition the entire mucous membrane of the naso-pharynx is displaced except at this one spot, and this immobility causes the cavity in question to form a reservoir in which the normal or pathological secretions accumulate. It is by this mechanism that the author explains the special disorders of secretion (localized catarrh or cyst) mentioned by Tornwaldt as peculiar to this region. This proves that the so-called bursa pharyngea is a recess in the mucous membrane.

G. Killian <sup>13</sup><sub>July 15</sub> finds a general similarity existing between the pharyngeal tonsils and the pharyngeal bursa, but a difference in the follicles of each. Potiquet, <sup>136</sup><sub>Dec. 15, '89</sub> after a careful examination of 16 heads, states that there exists in the vault of the pharynx a depression, but not a bursa, which is to be regarded as the posterior extremity, or as an annex of the median cleft. He thinks it an anatomical error to call this depression "the bursa of Luschka," and advises a return to the name given to it by Robin, "the foramen cæcum."

Retterer<sup>37</sup><sub>May</sub> concludes, after careful examinations, that the bursa of Luschka is only a diverticulum of the pharyngeal mucosa, and gives a microscopical section to prove the point.

*The Communication of the Nasal Lymph-Passages with the Subarachnoid Space.*—T. S. Flatau<sup>69</sup><sub>Oct.30</sub> gives an account of his experiments on this subject. He quotes a case of chronic hydrocephalus which got well after an abundant serous discharge from the nose. He states that Naunyn and Schreiber were able to inject warm salt solution into the subarachnoid space of the dog and make it come out at the nose, the phenomenon being accompanied by protrusion of the eye and chemosis. Schwalbe, Key, and Retzius demonstrated the existence of this communication. Flatau proves the correctness of former experiments by injection experiments of his own, but finds that, although injections into the subarachnoid space reached the nose, the injection of colored fluid into the nose did not, however, lead to an entrance of the fluid into the arachnoid space, on account of the barrier presented by the columnar epithelium.

Robert C. Myles<sup>771</sup><sub>Apr.</sub> discusses the practical anatomy of the nose associated with the pharynx and ear, and shows that the relative anatomy should be so appreciated by the specialist that he would always know, from landmarks on the drill-saw or other instrument, in reference to the margin of the anterior nares, the exact position of the cutting or snaring end of the instrument.

*The Central Nervous Olfactory Apparatus.*—Trolard<sup>3</sup><sub>Nov.27</sub> <sup>11</sup><sub>April</sub> states that the olfactory trunks at the level of the anterior cribriform plate form, by the flattening of their substance and by the radiation of the white fibres emanating from the olfactory axis, a kind of sensitive plate, which merits the term "olfactory area." This area has relations with (1) the medulla oblongata; (2) the anterior tubercle of the optic bulb; (3) the cerebral cortex.

*The Respiratory Functions of the Nose.*—Greville Macdonald<sup>15</sup><sub>Feb.</sub> has made experiments to determine the respiratory functions of the nose. The method of investigation which he adopts is exceedingly ingenious, and sources of error appear, as far as possible, to have been carefully excluded. The apparatus consists, in the main, of a series of tubes, by means of which air could be passed through the chambers of the nose without encountering the mucous membranes of the pharynx or mouth, and at the same

time being uncontaminated with air from the lungs. His conclusions are as follow: First, that the air in passing through the nose alone, and before reaching the pharynx, is raised almost, if not quite, to the temperature of the blood, however reduced the atmospheric temperature may be at the time. Several of the experiments, it may be noted, were carried out in a refrigerating chamber at a temperature considerably below the freezing-point, and the above conclusion remained good. Secondly, however dry the external air may be, it is, on passing through the nose, completely saturated with moisture. Thirdly, a considerable gaseous exchange takes place in the nose between the inspired air and the blood; and the quantity of carbonic acid exhaled by the nasal mucous membrane is proportionate to the number of degrees in temperature to which the air is raised.

In his explanation of these functions of the nose, Macdonald lays special stress on the well-recognized erectile property possessed by the mucous membrane covering the inferior spongy bones,—a fact to which attention was first directed, he holds, by Toynbee in England.

*Bacteria in the Normal Air-Passages.*—L. von Besser,<sup>768</sup>  
in 84 examinations, has found in the nasal fossæ numerous microbes, pathogenic or not; by order of frequency of the former, the diplococcus of Fränkel was found 14 times; the staphylococcus pyogenes aureus, 14 times; the streptococcus pyogenes, 7 times; the bacillus of Friedländer, twice. Of the latter, the micrococcus albus liquefaciens was found 22 times; the micrococcus cumulatus tenuis, 14 times; the micrococcus flavus liquefaciens, 3 times, etc. In the accessory cavities no micro-organisms were found. In 1 case of pyæmia of the antrum of Highmore, v. Besser found the diplococcus of pneumonia and the streptococcus pyogenes. Paulsen<sup>59</sup>  
Sept. 5 notes, in addition to the above, what he terms the “Doppel-bacillus” and “Tetrakokken,” which are of the rod-shaped varieties.

*Anomalies of the Nose.*—Landow,<sup>301</sup>  
June 30 of Göttingen, records a rare case of malformation of the nose. A child 5 weeks old had a normal right half of the nose. The median part was covered with skin. Instead of the left half, there was a body  $1\frac{1}{2}$  centimetres long and  $\frac{3}{4}$  centimetre broad, resembling the trunk of an elephant. This trunk was extirpated, and, four years later,

a small fistula remained. Killian,<sup>312</sup><sub>No.8</sub> of Worms, has occasionally found, on rhinoscopic examination, both upper turbinated bodies on both sides divided into two halves.

#### DISEASES OF THE ANTERIOR NASAL CAVITIES.

*Caseous Coryza*.—Schleicher<sup>37</sup><sub>July</sub> agrees with Bories that the deposits found in cases of caseous coryza result from a necrobiosis of mucous polypi; ablation of the polypi and detergent injections soon cure the affection. Wagner,<sup>136</sup><sub>Oct.15</sub> of Lille, admits that the degeneration of polypi may explain the etiology of many cases, but gives the history of a case in which polypus was not present. He agrees with Cozzolino that scrofula is an important etiological factor in the production of this disease. Wagner insists on the superiority of insufflations of air in dislodging the caseous masses, having used them successfully in cases where watery injections failed.

*Acute Rhinitis*.—G. M. Garland,<sup>2</sup><sub>Nov.7,'89</sub> publishes 4 cases of coryza in which various remedies had failed to produce any relief, but in which tincture of euphrasia, in doses of 10 drops, produced surprising relief. Beverley Robinson,<sup>80</sup><sub>Feb.15</sub> on the other hand, states that after trying it for years he believes that it has no more influence than that of many other drugs, and in his opinion seems not to be comparable to the carbonate of ammonia in frequently-repeated and tolerably large doses. Pavel I. Griäznoff,<sup>683</sup><sub>No.1,p.6</sub> of Odessa, writes that the inhalation of eucalyptus-oil, employed early, cuts short an acute attack of coryza. If the odor of eucalyptus-oil is disliked, 1 part of peppermint-oil should be added to 2 parts of eucalyptus-oil. A dilute emulsion of creolin with distilled water, inspired directly, has been recommended by Brunn.<sup>107</sup><sub>Mar.16</sub> C. H. Stowell,<sup>1</sup><sub>Mar.1</sub> of Washington, advises that sprays or powders containing cocaine should not be continued after the first few days of the attack; that they should not be prescribed for chronic cases, and that the physician should dispense his own powder, giving not over a drachm (4 grammes) to each patient. He then suggests the following, to be used as snuff:—

R Sodii bicarb,	.	.	.	.	.	gr. ij (0.14 gramme).
Magnes. carb. lev.,	.	.	.	.	.	gr. iij (0.20 gramme).
Menthol.,	.	.	.	.	.	gr. j (0.07 gramme).
Cocaine hydrochlor.,	.	.	.	.	.	gr. iv (0.25 gramme).
Sacch lactis,	.	.	.	.	.	℥iiss (6.00 grammes).—M.



Marano<sup>461</sup><sub>June 10</sub> on nasal ozæna in several patients of Massei's clinic, in Naples, show that there is really a special organism, which Marano calls rhino-bacillus, which is not present in other inflammatory conditions of the nose or in other diseases. It is capsulated, but different from other parasites described by Dittrich, Paltauf, Friedlaender, Babes, Mibelli, Mellé, Pellizzari, and Zagari. It is very abundant in subjects who have not been under treatment; it diminishes in number when a local cure is effected, and, according to the theoretical views of Massei, it was *never* found in typical forms of atrophic rhinitis. It is, in fact, Loewenberg's micrococcus (Marano is of opinion that the form is rather that of a bacillus), and the reason why the capsule was not seen may be explained by the fact that it required a special coloration. Marano's studies tend also to demonstrate that Hajek's bacilli are the same, non-pathogenic organisms of putrefaction, which are also present in the secretions of patients having ozæna. It is, however, necessary to obtain positive results from inoculation experiments before the theory can be accepted. (Report of Massei, corresponding editor, Naples.)

Rosenfeld, of Stuttgart,<sup>136</sup><sub>Oct. 15</sub> insists on heredity as a causative influence, and in support of his statement cites the case of a family in which the mother and nine of her descendants had ozæna. Massei, of Naples,<sup>461</sup><sub>June 10</sub> favors Seifert's (of Würzburg) division into simple atrophic rhinitis and fetid atrophic rhinitis, and reports that his assistant, Marano, has never found the diplococcus of Loewenberg in the former, but constantly in the latter. Valentini, of Berney,<sup>461</sup><sub>June 10</sub> writing in favor of the mechanical theory of the etiology of ozæna, asserts that it was met with most frequently in those having a cranial malformation, where the nasal fossæ were contracted, especially in the upper portion.

Kayser,<sup>136</sup><sub>Oct. 15</sub> of Breslau, ascribes ozæna to a congenital arrest of development. Potiquet,<sup>136</sup><sub>Jan.</sub> believes that the form of the nose is really the result of the slowly-progressing pathological process of atrophic rhinitis, which precedes, prepares the way for, and accompanies ozæna. Hajek,<sup>26</sup><sub>Apr.</sub> of Vienna, observes that the coccus of Friedlaender is sometimes found, whilst the fetid bacillus is constant and specific. When cultivated the bacillus gives off the characteristic odor of ozæna. Lacoarret<sup>312</sup><sub>Nov., '89</sub> holds that the atrophic process is a chronic inflammation of the mucosa and deeper-lying



connective tissue, with enlargement of the nasal cavities and the formation of fetid secretions. He agrees with Loewenberg that the odor is due to a specific micro-organism. W. Spencer Watson<sup>6</sup><sub>Oct. 4</sub> suggests the probability of a connection between ozæna proper and lupus. Lennox Browne<sup>11</sup><sub>July</sub> questions whether ozæna is ever a sequel to hypertrophic rhinitis, or, as asserted by Bosworth, an entirely separate disease.

Löwenstein,<sup>57</sup><sub>May 18</sub> of Elberfeld, warmly recommends insufflations of aristol, both in simple and syphilitic ozæna, after thoroughly cleansing the nose and removing all crusts.

*Syphilitic Rhinitis.*—P. A. Pavloff,<sup>590</sup><sub>Jan.</sub> of Moscow, reports 2 cases of primary syphilitic chancre of the nose, of non-venereal origin, occurring in men. One, a clerk, who had been living with a syphilitic friend, received a superficial abrasion (from a fall) of the glabella, on the right side, close to the nose. The lesion transformed it into a somewhat elevated hard chancre, covered with a thin, grayish film. Glandular enlargements and secondary manifestations followed. In the other patient, the ulcer, the size of a farthing piece, occupied the inner surface of the right *ala nasi*. It had a circular shape; presented slightly raised, clean-cut edges, and a cherry-red, smooth, dry, depressed centre; the edges and base were slightly infiltrated. The outer surface of the nostril was considerably swollen and congested, and the adjacent glands were much enlarged.

A. B. Marfan<sup>287</sup><sub>June 25</sub> reports a case of chancre of the septum nasi, in which the virus had probably been carried to the nose by the finger of the patient. Gémy<sup>287</sup><sub>July 25</sub> reports a case of gumma of the septum, Iacoarret<sup>780</sup><sub>July</sub> adding 2, E. Baumgarten<sup>84</sup><sub>Dec., '89</sub> 2, and Raulin<sup>780</sup><sub>Jan.</sub> 1. Gouguenheim reports an unpublished case from his clinic, of syphilitic necrosis of the nasal bones and septum in a female 25 years old, probably hereditary. There was an opening in the right nasal bone, and a probe passed in through it traversed the septum. The patient was cured without deformity. P. Masucci<sup>42</sup><sub>Feb.</sub> uses subiodide of bismuth locally. Schuster<sup>28</sup><sub>v.10, p.262</sub> recommends insufflations of powdered aristol.

*Croupous or Fibrinous Nasal Diphtheria.*—V. Raulin,<sup>136</sup><sub>May 1</sub> of Marseilles, gives the history of several cases of strumous rhinitis and of polypi operated upon by him, in which diphtheritic lesions appeared. He has, in his observations, made an important omis-

sion in that he has not looked for the bacillus of Klebs-Loeffler. Finally, the author insists on the benign nature of these cases, and rejects the diagnosis of diphtheria. Gouguenheim does not agree with him, for he has seen cases of nasal diphtheria easily cured by topical treatment. (Report of A. Gouguenheim, corresponding editor, Paris.)

J. J. Green,<sup>144</sup> of Pittsburgh, reports 2 cases in which he used calomel internally in large doses, 120 grains (8 grammes) in twenty-four hours, and tampons wet with bichloride solution (1 to 1000) locally, alternating with iodoform reduced with calcined magnesia. H. D. Chapin,<sup>1</sup> of New York, discusses at length the relation of pseudo-membranous rhinitis to diphtheria, quoting Schüler, Hartmann, Moldenhauer, Seifert, Bresgen, and others, and concludes that, while there is such a disease as pseudo-membranous rhinitis, it is extremely rare. E. Baumgarten,<sup>81</sup> of Budapest, reports 2 cases of pseudo-membranous rhinitis, and claims priority over Hartmann in differentiating this affection. He finds that brushing the membranes with glycerin and iodine results in a cure.

*Nasal Tuberculosis—Lupus.*—N. Olymptis, in an inaugural thesis, divides nasal tuberculosis into two varieties, primary and secondary. The secondary form is the more frequent, and appears later. Nasal tuberculosis usually appears first on the septum, whence it spreads to the parts beneath, invading the turbinated bodies and other portions of the mucosa. The ulcerations are slightly elevated, edges uneven, filled with tubercles, and resting upon an infiltrated base. Sometimes true tumors appear, as in the larynx; at other times, as in infants, it appears as ozaena; hence the value of examining the secretions in ozaena. Later, this generalization in the nose may spread to the meninges. The author advises *curettage* and lactic acid as the best treatment. (Report of A. Gouguenheim, corresponding editor, Paris.) Kikusi<sup>673</sup> reports 2 cases of nasal tuberculosis. In the first there was an ulcerative perforation of the septum; in the second there was a tuberculous tumor. Michelson,<sup>69</sup> of Königsberg, remarks the rarity of nasal tuberculosis, considering the fact that the tubercle bacilli, usually, first gain access to the body through the nose. Seifert, of Würzburg,<sup>57</sup> has collected 38 cases of nasal tuberculosis, 4 of which had come under his own observation. In 19 cases there were no

signs of tuberculosis in any other organ. Grossard<sup>780</sup><sub>Jan.</sub> reports a case of nasal tuberculosis in a syphilitic, in which the diagnosis was confirmed by E. J. Moure. There was pulmonary tuberculosis also present. F. Hahn<sup>69</sup><sub>June 5</sub> reports 5 cases of nasal tuberculosis from Doutrelepont's clinic at Bonn. In all of these the disease started from the septum. J. Scheinmann,<sup>4</sup><sub>Aug. 18</sub> of Berlin, recommends pyoctanin in nasal tuberculosis.

Raulin,<sup>11</sup><sub>Mar.</sub> of Bordeaux, in a thesis on primary lupus of the nose, states that the single determining cause is the penetration of Koch's bacillus into the nasal mucosa, and distinguishes three clinical forms, viz., hypertrophic, ulcerative, and sclerous. Scarification is recommended for treatment. Wagner<sup>121</sup><sub>Mar.</sub> has proven the identity of lupus and tuberculosis by inoculation and control experiments.

*Cystic Tumors.*—Geo. W. Major,<sup>11</sup><sub>Sept.</sub> of Montreal, reports a case of osseous nasal cyst arising from the middle meatus, to the surface of which numerous polypi were attached. On puncture a flow of yellow serous fluid occurred. After removal by the cold snare the cyst-wall was found to be composed of a thin layer of bone, which was quite translucent. The cyst was of the size of a small cherry. This makes the third recorded case, the others having been reported by Glasmacher and L. Dayer. R. Horsley,<sup>36</sup><sub>Jan. 1</sub> of Edinburgh, reports a case of cyst of the posterior extremity of the inferior turbinated body. Cotterill<sup>36</sup><sub>Mar.</sub> believes that these cysts are not so rare as has been suggested, and that they have been hitherto mistaken for the softer forms of mucous polypus. Schmiegelow<sup>375</sup><sub>Feb.</sub> reports 3 clinical cases of cysto-pneumatic expansion of the middle turbinated bone. (Report of Holger Mygind, corresponding editor, Copenhagen.) B. Fränkel<sup>4</sup><sub>June 2</sub> reports a case in which the cyst was so large that it protruded from the nares, causing complete stenosis. The cyst contained serum and pus.

*Dermoid Tumor.*—Bramann,<sup>84</sup><sub>Feb. 15</sub> of Berlin, reports a case of dermoid tumor of the posterior nares.

*Papilloma.*—Moure<sup>918</sup><sub>Feb. ; May</sub> gives a good clinical picture of this rare tumor. Robertson<sup>11</sup><sub>Mar.</sub> reports 2 cases in which true papillomata were found on the inferior surface of the lower turbinated body. The excision of these was attended with more hæmorrhage than is usually present when mucous polypi are removed.

*Nasal Polypi.*—R. Botey,<sup>136</sup><sub>Jan. 1</sub> of Barcelona, in an exhaustive

article on the structure of mucous polypi, concludes that nasal polypi are essentially fibro-myxomata. W. C. Jarvis,<sup>771</sup> of New York, insists that superior deflection of the septum is a very frequent cause of the growth of polypi, and its correction necessary to effect a radical cure. The etiology of congenital and hereditary cases is explained by the "hereditary septum." A case of congenital nasal polypus reported by Cardone<sup>624 136</sup> would seem to bear this out. No. 4,789; Jan. 1. P. Heymann<sup>41</sup> reports a case of nasal polypus in a child under 1 year of age. June 23. Newman<sup>213</sup> reports two large polypi removed, one weighing 3 ounces, the other 4 ounces. June. P. G. Lewis<sup>6</sup> removed fifty-six polypi from one patient. June 28. Both nostrils were completely blocked, and a number of grape-like masses projected into the naso-pharynx. The snaring of the latter was greatly facilitated by passing the finger behind the soft palate and pushing the growths forward. A black tumor, of the size of a small apple, removed from the middle meatus of a lady of 68 years by Michael,<sup>11</sup> was proved, by microscopical examination, to be a polypus, colored dark by numerous hæmorrhages. Nov.

Michael, of Hamburg,<sup>37</sup> removed from the nose of a girl, aged 7 years, a polypus having within it some air-containing cysts. Oct. Luc<sup>152</sup> and Jarvis<sup>771</sup> each report a case of telangiectatic myxoma. Nov. 14. Apr.

A. D. Williams<sup>109</sup> states that the merest touch of the galvanocautery is sufficient to kill the pedicle, but the membrane itself must be destroyed to prevent return. Aug. E. H. Griffin,<sup>59</sup> of New York, has abandoned the use of the cautery and all irritating applications, after removal of the polypus, and uses with success a spray of hamamelis or pure alcohol, night and morning, for a year. June 28. This, he claims, will prevent return.

*Larvæ in the Nose.*—R. G. Jennings,<sup>72</sup> H. S. Douglas,<sup>72</sup> R. T. Darwin,<sup>239</sup> E. W. Fiegenbaum,<sup>760</sup> and Ezequiel Torres<sup>792</sup> report cases of this character. Jan. Aug. 30. Dec. 9, '89. Jacobsen<sup>2</sup> notes that the presence of ozæna, or foul smell of any kind, is a powerful attraction to the fly. Nov., '89. He reports a case of Menocal's in which death from acute encephalitis followed from perforating ulceration of the ethmoid bone. Removal of the larvæ and antiseptic injections are generally efficient. Torres,<sup>792</sup> reports success in the use of an infusion of marrubium. Dec. 9, '89.

*Foreign Bodies and Rhinoliths.*—Chiari<sup>37</sup> reports 2 cases; in 1 case in the middle of the rhinolith small pieces of cork were found; in the other, a hard substance like bone. Jan. In both cases

numerous micrococci were found, filling every lacuna of the surface of the rhinolith. These cocci, he believes, are an important etiological factor in the formation of the concretions by withdrawing the lime salts from the nasal mucus and favoring their accumulation around the foreign body. Strickler <sup>776</sup><sub>July</sub> removed a piece of wood  $1\frac{1}{2}$  inches long and fully  $\frac{1}{2}$  inch thick, forcibly introduced into the nostril. Gouguenheim (corresponding editor, Paris) reports a case under the care of Noquet, of Lille, in which there was no pain, but marked lachrymation on the affected side and slight reflex lachrymation of the left eye. Baumgarten <sup>84</sup><sub>Dec. 21, '99</sub> found two grape-seeds as a nucleus in a rhinolith. Major, <sup>11</sup><sub>Sept.</sub> <sup>282</sup><sub>Aug.</sub> in a woman aged 31 years found as a nucleus fragments of sea-shells placed in the patient's nose in childhood. In this case there was no offensive odor or excoriation of the lip.

*Congenital Occlusion.*—A. Schwendt, <sup>2</sup><sub>May 31,</sub> <sup>57</sup><sub>Jan. 26</sub> of Basle, has published a monograph on this subject. It is based on 32 cases, 24 having been met with in his practice. In only a few of the latter was there any concomitant developmental anomaly of the frontal, nasal, or orbital regions. The occlusion was in almost all cases bony, though varying in thickness. In fact, in only 1 case, that of a newborn infant, which lived only a few days, was the occlusion membranous. The most important symptom in the newborn was incapacity of sucking. The best treatment is to destroy the occlusion by the galvano-cautery and keep the passage open by means of tubes of tin or rubber. Jonquière, of Berne, in referring to Schwendt's work, insists on the importance of diagnosing this defect, since many an infant may perish simply in consequence of the defect remaining unrecognized. Landow <sup>301</sup><sub>No. 6</sub> reports a case of unilateral occlusion.

*Obstruction of the Nostrils.*—W. Robertson <sup>2</sup><sub>Jan. 25,</sub> <sup>2</sup><sub>Oct. 18</sub> reports 2 cases in which the occlusion was due to the presence of two pale-white membranes, one about the centre of the right nares and the other at its posterior termination. The turbinated bone had completely disappeared. They were successfully treated by the galvano-cautery. B. Fraenkel <sup>11</sup><sub>Aug.</sub> reports a case of bulla ossea in a lady 27 years old, who had complete obstruction of the right nostril. The cavity of this nostril was closed by a red tumor, covered with a thin layer of bone. By puncture, serum and pus were removed. The bony wall was removed by forceps. It was attached to the

middle turbinated body. Baumgarten<sup>84</sup><sub>No.51,'89</sub> has noticed a case similar to those reported by Robertson, in a patient aged 31 years, in which galvano-caustic destruction of the membrane resulted in cure. It was difficult to decide whether the condition was congenital or not.

H. Holbrook Curtis,<sup>61</sup><sub>Jan.11</sub> of New York, calls attention to the connection between anæmia and nasal stenosis, and demonstrates by statistics that patients show improvement in color of the skin after the relief of marked stenosis, and that the increase of oxy-hæmoglobin in the blood after operations for obstruction is directly proportional to the relief afforded an impeded nasal respiration.

C. Ziem,<sup>385</sup><sub>No.6</sub> of Dantzig, has produced scoliosis of the vertebral column in high degree in rabbits by obstruction of one-half of the nose. On account of this obstruction the development of the face is diminished on that side, and this is followed by the malformation of the vertebral column. Ziem observed one patient who became scoliotic after having acquired a traumatic malformation of the septum. P. Redard<sup>55</sup><sub>Oct.4</sub> has noticed the same connection between spinal curvatures and nasal obstruction.

William Hill<sup>2</sup><sub>Sept.13</sub> advocates Hewetson's method of forcible dilatation, especially in anterior nasal stenoses. He produces rapid dilatation of the stenosed nasal passages by means of an instrument resembling a large steel glove-stretcher. Krakauer<sup>336</sup><sub>Nov.15</sub> uses cardboard tampons, wet with carbolic solution, after operations for the relief of nasal obstruction, to prevent the formation of cicatricial bands; while Fränkel (*ibid.*) uses tampons of tin-foil (free from lead) dipped in lanolin-cream.

Reference<sup>11</sup><sub>Apr.</sub> may be made in this section to a case reported by Poisson. He calls the case "a diffuse hyperostosis of the superior maxillæ." The affection usually begins in both superior maxillary bones, invades their sinuses, appears under the skin and in the nasal cavities, and tends to propagation to the bones of the face and cranium. It commences in young subjects, progressing with extreme slowness, and leads to death by a progressively fatal course. Virchow regards this affection as a kind of osseous elephantiasis, others relate it to rachitis, and others still to sarcoma. Poisson believes it to be a trophic affection of neuropathic origin.

*Epistaxis*.—Stern<sup>113</sup><sub>June 8</sub> details a case of epistaxis followed by acute œdema of the lungs. Parisot, of Nancy (Report of Gou-

guenheim, corresponding editor, Paris), divides epistaxis in the aged into three varieties, as to the source of the flow: arterial, venous, and capillary. In the first variety the hæmorrhage, if not immoderate, is salutary. Its danger lies in the condition of which it is the consequence. In the second variety varices of the mucosa are the source of the bleeding, and the prognosis is less serious. Finally, the epistaxis due to rupture of fatty capillary vessels is not dangerous. In the second and third varieties the indications are to arrest the hæmorrhage, but in the first intervention should not be too prompt.

W. W. Parker<sup>50</sup><sub>Oct.4</sub> makes use of 15 long threads of patent lint,  $3\frac{1}{2}$  or 4 inches long, which are doubled on themselves and tied in the middle by a string, one end of which is left 6 or 8 inches long, for ease in extraction. The bundle of threads is passed back into the posterior nares by a probe and left there; the probe is withdrawn and the anterior nares plugged. These 20 or 30 ends floating in the blood at once coagulate it. Fridenberg<sup>59</sup><sub>Apr.19</sub> uses a piece of drainage-tubing of small calibre—about 10 inches long—as a substitute for Bellocq's canula. Alven<sup>228</sup><sub>Oct.15</sub> confirms the value of very hot water irrigations, and Schalten<sup>21</sup><sub>Feb.24</sub> uses tampons of iodoform cotton with great success. Ruault<sup>286</sup><sub>Dec.,'89</sub> recognizes certain repeated epistaxes due to a traumatic erosion on the antero-inferior aspect of the septum, and these cases, he finds, are rapidly cured by filling the anterior nares with vaseline two or three times daily for two or three weeks. F. H. Potter<sup>61</sup><sub>Sept.27</sub> uses the cautery point in these cases.

*Hay Fever.*—J. B. Berkart<sup>6</sup><sub>July 5,12</sub> denies the various current theories, and ascribes the onset of hay fever to bacteriological causes. De Lancey<sup>170</sup><sub>Sept.</sub> of Rochester, suggests that some cases may be due to anæmia, and to prevent this being overlooked the blood should always be examined, if the cause is not evident. De Lammallerée<sup>2</sup><sub>May 10</sub> looks upon the disease as a neurosis of nasal origin, the exciting cause of which is erection of the mucous membrane set up by some irritant substance, and claims success in subduing the morbid sensitiveness of the parts by means of douches of carbonic-acid gas locally, for a quarter of an hour at a time, three times daily. In severe cases he gives the gas by the rectum, in 6-litre (6 quarts) doses, morning and evening. F. W. Bartlett<sup>170</sup><sub>Sept.</sub> uses simple cream as an emollient.

D. F. Wright<sup>79</sup><sub>Oct.</sub> records a case of cure. He believes that recovery was entirely brought about by successfully eluding the annual paroxysm for several successive years by resorting to an exempt locality before the first symptoms had manifested themselves, and staying there until the date when all symptoms had departed in former years.

Beverley Robinson<sup>1</sup><sub>Apr. 19</sub> alluding to the observers who insist on the importance of the nasal factor in the production of hay fever, states the following: "Admitted, they say, that hay fever depends upon a neurotic habit and a specific irritant, still the latter would not take effect if the nose were in a healthy condition, and they proceed to discover with absolute certainty this intra-nasal disease. Occasionally they are correct in their interpretation; the nose is diseased and requires surgical treatment. In many instances the morbid state of the nasal organ is merely a resultant of morbid processes situated elsewhere, and it will be remedied from this broad stand-point only by judicious medication.

"Finally, there are instances in which the amelioration of the case may depend, in some degree at least, upon the proper local treatment of the nasal membrane; but this treatment should be that of soothing or altering the condition of the soft parts by suitable topical applications, and not the ablation or resection of portions of organs supposed to be diseased, when in reality they are healthy.

"Much of what has been said as applicable to hay fever is also applicable to hay asthma. Perennial asthma should now be considered. Can this disease—so difficult to treat successfully, so varied in its manifestations, of such different origin—be cured frequently by the removal of a nasal obstruction? Certainly and unhesitatingly I answer, no, it cannot. Peripheral irritation in the nose is without much doubt a predisposing cause of asthma in a certain proportion of cases; in a very moderate percentage should it be regarded as a direct and efficient cause of this disease. Asthma, as we know, may be occasioned by any number of conditions which are of the nature of peripheral irritations. A disordered stomach, a loaded rectum, a painful ovary, a decayed tooth may precipitate the attack. In like manner, an irritated or obstructed nose may produce this effect. I have seen many cases already in which the removal of mucous polypi or enlarged tur-



binated bodies from the nasal passages seemed to result in a cure for a time; but the cures were not permanent; the attacks of asthma returned sooner or later. It may be that they were ameliorated, that their intensity was diminished, and their frequency lessened; but the patient was not permanently cured."

*Rhinoscleroma*.—Wolkowitsch<sup>336</sup><sub>No.23, July 12</sub> has collected 76 cases in addition to 11 recorded by himself. He found that micro-organisms were always present, which were stained by Gram's method, and, morphologically, could not be distinguished from Friedländer's pneumococcus. Paltauf and Eiselsberg,<sup>84</sup><sub>Jan.18</sub> however, have succeeded in differentiating the two bacilli. The cultures of rhinoscleroma dried up more rapidly and lost their power of vegetation, and the cultures of the pneumococcus, in a solution of sugar, evolved much gas, owing to the decomposition of the sugar; whereas this was not the case with the cultures of rhinoscleroma. Finally, when an acid cultivation soil was chosen—for instance, gelatin of beer-wort—the pneumococcus developed well, whereas the bacillus of rhinoscleroma did not thrive. Bojen<sup>385</sup><sub>Mar., '99</sub> reports 1 case, and William Robertson,<sup>673</sup><sub>July</sub> collaborator, reports 2 cases. The only satisfactory treatment has been excision or destruction by the galvano-cautery.

Rydygier, of Cracow,<sup>8</sup><sub>No.50</sub> tested Koch's treatment as a diagnostic agent in rhinoscleroma. No reaction took place, although the liquid employed had caused marked reaction in tuberculous affections.

*Anosmia and Parosmia*.—Massei, corresponding editor, Naples, reports an interesting case of recovery from anosmia after forty years. The case was under the care of d'Agnanno.<sup>624</sup><sub>No.51</sub> There was a narrowing of both nostrils from deviated septum and polypi. Correction of the former and removal of the latter resulted in cure. D'Agnanno refers to Bauer's case, quoted by Mackenzie, in which the anosmia of fifteen years' standing disappeared after appropriate treatment of nasal lesions. René,<sup>100</sup><sub>July 31</sub> of Nancy, reports a case of anosmia in a patient the subject of chronic rhinitis, without history of hereditary disease or traumatism. An interesting feature in connection with this case was the fact that, at intervals of several months, he suffered temporarily from parosmia, sometimes in one nostril, at other times in the other. J. E. Rhodes<sup>439</sup><sub>June</sub> relates a case following a blow on the side of the head, but without nasal lesions.

H. Zwaardemaker, of Utrecht, <sup>54</sup><sub>No. 13, '89</sub> <sup>673</sup><sub>Jan.</sub> after experimenting on two subjects with his olfactometer (see ANNUAL, 1889), to determine the action of cocaine on the sense of smell, concludes that (1) cocaine, absorbed in sufficient quantities by the mucosa of the upper portion of the nose, produces a temporary anosmia; (2) this anosmia is preceded by an hyperæsthesia of the olfactory sense; (3) this anosmia exists at the same time for distinctly different odors. Onodi <sup>11</sup><sub>Apr.</sub> gives a case of parosmia in which the patient had, along with subacute coryza a constant smell of musk, urine, or petroleum.

#### DISEASES OF THE SEPTUM.

*Atrophy and Hypertrophy.*—Klein <sup>118</sup><sub>Mar.</sub> has examined over 600 cases, and finds atrophy and hypertrophy of the septum among the most frequent changes. In most cases traumatism was found to be the cause. Atrophy was usually found in the cartilaginous portion, and hypertrophy in the bony portion of the septum. Atrophy is much less common on account of the resiliency of the cartilage in young children and its greater liability of avoiding blows. Atrophy without deviation requires no particular treatment. The treatment of hypertrophy should be regulated by its extent and the permeability of the nasal ducts. If respiration is interfered with the cartilage should be divided to the bone with a bistoury or thermo-cautery. If it is necessary to attack the bony portion the author prefers a bone forceps to the nasal saw. By this means he has treated 32 cases, and avoided the destruction of the mucous membrane and the formation of a troublesome scar. O. Laurent <sup>136</sup><sub>Oct.</sub> reports a case of obliteration of the nares by symmetrical hypertrophy of the septum, cured by operative measures. Bartnal <sup>11</sup><sub>Sept.</sub> notices an unnamed complication of hypertrophy of the nasal septum. The patient could not pronounce a word in which was the letter "n" without a feeling of great irritation in the cartilaginous portion of the septum. These sensations occurred during mastication, and to avoid them he only took liquid food. There was also congenital cartilaginous deviation. Bartnal canterized with the galvano-cautery, the hypertrophy disappeared, and the patient was permanently relieved.

*Deviation.*—Morris J. Asch <sup>1</sup><sub>Dec. 20</sub> presents a new operation for the correction of deviations of the nasal septum. The instruments he employs in this operation are:—

1. A pair of strong cartilage scissors, one blade thick and blunt for introduction into the obstructed nostril; the other, the cutting blade, of a curved wedge-shape, the shanks curved outward so as to admit of closing without interfering with the columna. The handles are of steel and curved, like those of a dental forceps.

2. A curved gouge for breaking up any adhesions that may exist between the septum and turbinated body.

3. An Adams forceps, or one with stout parallel blades.

4. A triangular splint of tin, cut to adapt itself to the cartilage of the section. Asch describes his operation as follows: "If the patient has a good deal of nerve, the operation may be performed with the aid of cocaine; but, as a rule, it is best to use ether. Before the operation the nostrils are to be well washed out with a disinfecting solution, such as listerine, or, what I have been accustomed to use, Dobell's solution, with the addition of thymol and eucalyptol. The patient then having been etherized, the adhesions between the septum and turbinated body, when such exist, are broken up by the use of the curved gouge. The blunt blade of the scissors is inserted into the obstructed nostril and the cutting blade into the other; a crucial incision is then made as near as possible at right angles at the point of greatest convexity. The forefinger is then inserted into the obstructed nostril; the segments made by the incision are pushed into the opposite one, and the pressure continued until they are broken at their base and the resiliency of the septum destroyed. On this point depends the success of the operation, for, unless the fracture of these segments is assured, the resiliency of the cartilage will not be overcome and the operation will fail. The septum is then to be straightened with the Adams or other strong forceps, and the hæmorrhage checked before proceeding further, which is usually accomplished by a spray of ice-water, though sometimes tamponing may be required. The nostril having been cleaned, the straightened septum is then held in position by the tin splint previously wrapped with absorbent cotton, moistened in a solution of bichloride of mercury, of 1 to 5000, and the nostril packed with gauze or absorbent cotton, moistened with the same. The tamponing must be thoroughly done, or hæmorrhage will certainly recur. I usually introduce a pledget of gauze or cotton, to which a ligature is attached, as far into the nostril as is possible, leaving the string

hanging out, and pack the moistened pledgets firmly upon this. The splint and tampon is allowed to remain undisturbed for four days, when they are removed and the parts cleansed with a disinfecting solution; the splint and tampon are then re-applied, the parts being straightened, if necessary, with the forceps. This is repeated two or three times a week for three weeks, by which time the parts have become permanently fixed in their improved position; but it may require at least two weeks more before the parts are healed and the patient breathes through an unobstructed nostril. It sometimes happens that posteriorly to the cartilaginous deviation a bony one exists. This can then be easily remedied by the electro-trephine or saw." The great advantage of this operation lies in its simplicity and in its easy and rapid performance—that it involves no loss of substance and entails but little annoyance to the patient after the operation. Asch found it to be perfectly satisfactory, permanently relieving the obstruction in all cases; only those in which there existed deflection of the bony septum discovered after the correction of the cartilaginous deformity requiring any further treatment. In 1 only of the cases reported was there any hæmorrhage of a severe character, which was easily checked; and in another there remained, for two or three years, a small perforation, which has since healed. In all of the cases the deviation of the septum was toward the left,—a fact in accord with the observation of most writers.

Sandmann <sup>41</sup><sub>July 14</sub> urges the use of files, of various shapes, to remove the redundant cartilage. The senior editor of this department has found filing a useful and painless measure in the reduction of exostoses and ecchondroses of the septum, and alluded to it some years ago. Jarvis <sup>99</sup><sub>July 3</sub> has modified his forceps so that while the six incisions are made an island in the centre is left untouched. With this he has never had perforation of the septum as a secondary result.

M. R. Brown, <sup>779</sup><sub>Apr.</sub> of Chicago, has devised for use on the cautery snare a metal ring, properly insulated, to be attached to a cross-bar to which the wire is made fast. He has also invented a saw to be used with a dental engine or electric motor. Any form of blade can be easily fitted to its jaws.

F. J. Moure <sup>2</sup><sub>Aug. 9</sub> describes the electrolytic method of dealing with deviations and spurs. Bergonié, <sup>3</sup><sub>Aug. 13</sub> of Bordeaux, favors the same

measure, preferring the bipolar method (the two needles being insinuated into the neoplasm). Moure shows preference for the monopolar positive puncture.

*Perforation of the Septum.*—Toeplitz <sup>11</sup><sub>Oct.15</sub> recognizes the causal influence of syphilis, tuberculosis, diphtheria, leprosy, and atrophic rhinitis in producing perforations of the nasal septum. He has further noticed that  $61\frac{3}{10}$  per cent. of workers in Schweinfurt green suffer from perforation of the septum, but only of the cartilaginous portion. Baumgarten <sup>112</sup><sub>Dec.21, '89</sub> noticed perforation following diphtheria. Sixteen days of antiseptic treatment healed the mucous membrane, but there remained a perforation of the bone. Rosenfeld, of Stuttgart, <sup>69</sup><sub>July 10</sub> believes that in some cases there is trophoneurotic gangrene of the cartilage. Hajek <sup>57</sup><sub>June 22</sub> has made researches on 38 cases, and finds that there is a necrosis beginning in the mucous membrane, which finally destroys this and also the cartilage, thus agreeing with Rosenfeld. He denies any and all connection between this disease and syphilis, tuberculosis, or diphtheria, and claims that it can only be explained by an inherent anatomical disposition of the septum to ulceration. D. S. Campbell <sup>185</sup><sub>June</sub> notes anæmia as a predisposing cause of perforation. S. Mitchell, Jr., <sup>59</sup><sub>Jan.11</sub> cites a case to prove that perforation is in many cases induced by the patients themselves by picking or abrading the septal mucous membrane. (See ANNUAL, 1890.) He used applications of ung. hydrargyri nitratis dil. to the edges of the ulceration. Cotton pledgets were cut the shape and size of the opening, and to either side of the pledget circular pieces of canton-flannel were stitched, the diameter of the latter exceeding that of the cotton by  $\frac{1}{8}$  inch, thus making a flange on both sides of the cotton. Between these flanges the ointment was placed.

*Abscess of the Septum.*—S. G. Dabney <sup>81</sup><sub>Sept.</sub> reports 3 cases; 1 was syphilitic, 1 traumatic, and 1 was apparently due to the general cachectic and debilitated state of the patient. In the first and second case there was a sinking in at the junction of the cartilaginous and bony septum, as in the cases reported by Gouguenheim. (See ANNUAL, 1890.) A. Ricci <sup>624</sup><sub>July</sub> (reported by Massci, corresponding editor, Naples), in 2 cases of abscess following traumatic hæmatoma, instead of puncturing the abscess directly, penetrated into the cavity through the mucous membrane of the upper lip (sulcus gingivo-labialis).

*Hæmatoma*.—J. B. Ball,<sup>2</sup><sub>Jan.25</sub> reports a case due to a fall on the nose three weeks previous to examination. A few days after this the swellings were noticed. Pain and tenderness were absent. A few days in bed and the use of evaporating lotions completed a cure in two weeks.

*Cyst*.—Baumgarten<sup>84</sup><sub>Dec.28,'89</sub> reports a case in an adult, whose face was injured in his 3d year by the foot of a horse. The author found a tumor in the right nasal cavity of the size of half a walnut. By puncture he removed a serous fluid. The author believes that the traumatism produced a hæmatoma, that the blood was absorbed, the cyst remaining. There was no indication for operation upon the cyst.

*Spurs of the Septum*.—Loewe,<sup>136</sup><sub>Oct.15</sub> in a thesis read at the International Medical Congress, at Berlin, stated that there were two normal spurs or protuberances on the nasal septum: the projection of Schwalbe and the organ of Jacobson, which is an olfactory organ. Exostoses or spurs, he claims, are only hypertrophies of this organ. With this hypertrophy there are always associated: (1) the protrusion of the hypertrophied organ of Jacobson into the meatus; (2) atrophy of the contiguous portions of the turbinateds; (3) innervation of the septum opposite the hypertrophy; (4) outward deflection of the external wall of the nasal fossa and narrowing of the corresponding maxillary sinus; (5) concavity of the septum on the opposite side; (6) hypertrophy of one or more turbinateds on the opposite side. Reuter<sup>69</sup><sub>Aug.21</sub> would not interfere with spurs unless there were very decided indications. A. Bronner<sup>22</sup><sub>June 25</sub> advocates the use of the dental drill, and denies the efficiency of the galvano-cautery in their removal, as claimed by Swift Walker.<sup>6</sup><sub>Aug.30</sub>

*Tumors*.—S. G. Dabney<sup>81</sup><sub>Sept.</sub> reports 1 case of hard papilloma of the septum. It was situated about  $\frac{3}{4}$  inch from the anterior nasal orifice. It was a hard tumor, about the size of a raspberry, with a warty surface. It was painless, not tender, but bled easily, and was attached by a broad base, and caused inconvenience by the partial nasal obstruction and by hæmorrhage. It was removed with the knife, the bleeding being moderate. Microscopic examination showed it to be a papilloma.

F. H. Hooper<sup>771</sup><sub>Apr., '90</sub> reports a case of fibrosarcoma and 1 of myxosarcoma telangiectoides. They were both removed by the cold-wire loop.

## DISEASES OF THE NASO-PHARYNX.

*Naso-Pharyngeal Catarrh.*—Hood<sup>6</sup><sub>Mar.15</sub> describes a case of chronic naso-pharyngeal catarrh apparently caused by using a hair-wash containing arsenic. The lotion had been applied to the scalp and allowed to dry on. Catarrhal symptoms commenced a fortnight after first using the wash, and remained for five months. The lotion was examined and found to be heavily charged with arsenic. Within a few days of leaving off this application the symptoms disappeared. Carl Laker, of Gratz,<sup>113</sup><sub>Apr.27</sub> reports a case of acute naso-pharyngeal catarrh with typhoid symptoms. Irrigation with a 1-per-cent. salt solution removed a great quantity of white, greenish, and yellowish mucus. The author believes that there was a septic infection localized in the nose and affecting the whole body. Two micrococci were found in the secretion,—a bacillus and a capsulated coccus,—which were inoculated into rabbits; both animals died from septic infection. P. Gerber, of Königsberg,<sup>116</sup><sub>Jan.</sub> gives a report of 61 cases, with the purpose of examining into the question of Tornwaldt's disease. In some there was fœtor, where there was no complication with ozæna. After removal of the secretion a recess in the mucous membrane became visible. In some cases the secretions were retained in the fossa of Rosenmüller. In others a true retronasal tonsil, containing many recesses, could be seen, in some of which a central recess was visible. True cysts, as observed by Tornwaldt, were never seen. The author believes that catarrh of the recessus pharyngis can be cured by Tornwaldt's method. C. M. Richardson,<sup>11</sup><sub>May 20</sub> at the meeting of the American Medical Association, read a paper on "The Importance of Surgical Means Applied to the Naso-Pharynx in the Relief of Naso-Pharyngeal and Middle-Ear Catarrh," in which he shows the intimate association of the departments of rhinology and otology and makes a strong plea for their combined study both by rhinologists and aurists. D. E. Welch<sup>82</sup><sub>Nov.8</sub> also shows the close relationship of naso-pharyngeal disease and middle-ear catarrh. Wishart,<sup>39</sup><sub>Mar.17</sub> Knode,<sup>106</sup><sub>June</sub> and Edson<sup>192</sup><sub>Oct., '90</sub> have written papers on this subject.

*Adenoid Vegetations.*—H. L. Swain, of New Haven,<sup>99</sup><sub>July 10, '90</sub> presented a preliminary report on the development and early history of adenoid tissue in the naso-pharynx. In considering the functions of the adenoid tissue, many views were spoken of, but credence

given to a two-fold purpose which this tissue fulfills, namely, an organ for the formation of leucocytes, which, by virtue of their migration to the surface, come into a position to meet micro-organisms and protect the system by destroying them. Secondly, there seems to be a direct relation between the number of leucocytes present in this adenoid tissue and the demand of the rest of the system for those cells. Luc and Dubief<sup>286</sup><sub>Aug.</sub> presented an excellent paper on "Adenoid Vegetations at Different Ages." They maintain that their disappearance before the age of 20 years is by no means so constant as most descriptions of the subject imply. They also give an interesting description of the histological examination of adenoid vegetations in adults. In young adults (25) the structure is identically the same as in children. In older subjects there is an increase of fibrous tissue.

Chaumier,<sup>3</sup><sub>Mar.12</sub> has recorded 232 cases, but gives nothing new. W. S. Renner, of Buffalo,<sup>170</sup><sub>Apr.</sub> states that, of 500 cases of throat and nose diseases, there were 49 cases of nasal obstruction due to adenoids. Boucheron, of Paris,<sup>136</sup><sub>Aug.15</sub> has observed the co-existence of cleft palate and adenoid tumors in 6 cases. Körner, of Frankfurt-on-Main,<sup>34</sup><sub>July 8</sub> and Scanes Spicer<sup>25</sup><sub>Apr.20</sub> note the predominance of vaulted palate in patients affected with adenoids. Spicer also claims that dental caries is due to the same cause. Casselberry<sup>61</sup><sub>Sept.20</sub> details facial and thoracic deformities incident to obstruction by adenoids. P. Redard,<sup>55</sup><sub>Mar.22</sub> has also observed thoracic deformities, and, in addition, deviations of the spinal column (scolioses, kyphoses). L. Turnbull,<sup>2</sup><sub>Sept.20</sub> W. R. H. Stewart,<sup>2</sup><sub>Jan.25</sub> F. L. Jack,<sup>99</sup><sub>Sept.25</sub> Doyen,<sup>290</sup><sub>Aug.5</sub> and Raulin<sup>11</sup><sub>July</sub> show the causative influence of adenoids in producing deafness. A. Bronner,<sup>2</sup><sub>Sept.13</sub> found deafness in 90 per cent. of children having adenoids. Raulin asserts that in adults the deafness is in no way influenced by the destruction of the growths, on account of the long continuance of the lesions of the middle ear. Patrzek<sup>41</sup><sub>Sept.18</sub> writes to contradict the statement of former authors that adenoids are not found in old people. He gives a good description of the pathological differentiation of the tumors in young and old people. Ragoneau<sup>212</sup><sub>Aug.</sub> claims that adenoids predispose a patient to attacks of laryngismus stridulus, and quotes the observations of Coupard, who saw 45 cases in 56 patients having adenoids.

Kuhn, of Strasburg,<sup>71</sup><sub>June</sub> regards general anæsthesia as un-



necessary. H. Davis<sup>26</sup><sub>Apr.1</sub> has given chloroform a great many times without the slightest accident, largely in consequence, he thinks, of the position of the patient, the head being dependent at the end of the operating table. In children under 10 years he would by all means give an anæsthetic. D. Stewart<sup>6</sup><sub>Sept.20</sub> always uses chloroform. Brommer<sup>2</sup><sub>Sept.13</sub> rarely gives an anæsthetic, Marsh<sup>2</sup><sub>Sept.13</sub> always in children, and Macdonald<sup>2</sup><sub>Sept.13</sub> in every case.

A. Cartaz<sup>286</sup><sub>June</sub> discusses two complications of the operation for removal of adenoids,—hæmorrhage and infectious or inflammatory accidents (pharyngitis, amygdalitis, suppurative otitis). He gives a case of his own, and quotes 4 cases of severe hæmorrhage reported by Delavan, 1 by Segond, 2 by Ruault, 1 by Gellé, and 1 by Renner. He advises the use of hot astringent irrigation or antiseptic tampons charged with cocaine or some hæmostatic. Seifert,<sup>34</sup><sub>Jan.20</sub> Poland,<sup>2</sup><sub>Nov.22</sub> Good,<sup>218</sup><sub>Oct.</sub> and C. W. Richardson<sup>61</sup><sub>July 26</sub> have written upon this subject, but present little that is new.

*Carcinoma*.—Sidney A. Fox, of Brooklyn,<sup>1002</sup><sub>Feb.</sub> reports a case of this neoplasm. Rhinoscopy showed the post-nasal space plugged with a cauliflower-like growth. The lateral walls of the pharynx, as well as its posterior wall, were matted with the growth, as were also the choanæ and the spaces about the Eustachian orifices. There was no evidence of external or internal glandular involvement. Hodenpyl examined portions of the mass removed by cutting-forceps, and found the specimen to be epithelioma. The growth was removed by Annandale's operation (see ANNUAL, 1890), but the patient died two months after the operation. Six other cases are quoted by the author. Goodwillie, in discussing the case, suggested that the tumor could have been removed more easily by cutting through the hard palate, leaving the soft palate, and passing the electro-snare around the growth. An artificial plate could be used to cover the opening in the hard palate.

*Fibroma*.—F. Felici,<sup>461</sup><sub>July</sub> of Rome, reports a naso-pharyngeal fibroma removed with the galvano-cautery wire. T. M. Girdlestone, of Melbourne,<sup>285</sup><sub>Apr.15</sub> removed a large fibroma with a chain écraseur, after exposing the nasal fossa by Lawrence's operation and performing tracheotomy. An incision was made around the inferior part of the nose from one side to the other, separating the alæ from the cheek and upper lip; the septum was then divided for about three-fourths of its entire length along the floor

of the nares, and the alæ, with the detached part of the septum, were turned up toward the forehead; it was not necessary to divide the nasal process of the superior maxilla. H. von Unge<sup>366</sup><sub>Mar. 8</sub> effected the reduction of a fibroma by applications of the galvano-cautery.

*Fibrosarcoma*.—Saltzman<sup>498</sup><sub>v. 31, p. 273, '89</sub> reports the removal of a fibrosarcoma, which had invaded the antrum, by König's method. (See ANNUAL, 1889.) The operation was very bloody, and the patient was for a short time pulseless, but finally recovered.

Capart<sup>276</sup><sub>June 5</sub> employed electrolysis successfully in a retromaxillary polypus. The *séances* lasted eight minutes, and a current of 15 to 20 milliampères was used. Bouchaud<sup>41</sup><sub>July</sub> (report of Gouguenheim, corresponding editor, Paris) published a case of myxofibroma in a man of 36 years, which had existed for nineteen years. This enormous tumor filled the pharynx and nasal fossæ and expanded and contracted alternately. The author was on the point of operating several times, but the tumor disappeared spontaneously.

L. Grünwald, of Munich,<sup>34</sup><sub>May 20</sub> presents the technique of operations for retronasal tumors. For such retronasal tumors as are broad-based, and cannot be operated upon by Lange's instrument, or by the galvano-cautery, the author recommends the introduction of Bellocq's sound, with a wire on one side of the tumor, and its reduction by the same instrument on the other side. It is thus possible to place the wire around the tumor. The author relates a case in which he has applied the method with the best results.

#### REFLEX NEUROSES.

Trifletti<sup>461</sup><sub>Apr.</sub> points out that the exaggeration of the nasal reflex is the cause of some mistakes. Together with Lichtwitz, Trifletti believes that the existence of a neuropathic disposition (neurasthenia or hysteria) is to be allowed, and that we ought to differentiate cases of simple reflex neurosis from other pathological conditions, which, though very slight, may produce in predisposed subjects troublesome symptoms, and even pain, neuralgia, paræsthesia, etc., in the nasal region. The cases quoted by the author illustrate these practical views. (Report of F. Massei, corresponding editor, Naples.) E. Goris<sup>136</sup><sub>Jan. 1</sub> cites 11 cases illustrating the relation of nasal polypi, adenoid vegetations, polypi and dilatation of erectile tissues to asthma, migraine, neuralgia, ptosis, and even melancholia with suicidal tendency. He concludes that (1) nasal

lesions of different histological nature may produce similar reflex disturbances; (2) the lesion may be situated in any part of the nasal or naso-pharyngeal cavities; (3) the pathogeny of nasal reflexes is entirely explicable by the connection between the trigeminal and other centres of innervation. Réthi, of Vienna, <sup>57</sup><sub>Dec. 22, '89</sub> believes that reflex neuroses arising from nasal disease can be cured by local treatment and operation, but they may be made decidedly worse, or may even be originated by the cicatricial tissue which forms after operations. He reports 3 illustrative cases in which removal of cicatricial tissue was followed by the disappearance of the neuroses (hemicrania, sneezing, and vertigo). The author refers to the case quoted by Semon of Graves's disease produced by an operation for nasal polypi. O. Laurent, of Hal, <sup>288</sup><sub>June 8</sub> cites a similar case, and quotes cases reported by Aronsolm, Roosa and Pomeroy, Beverley Robinson, and Curtis.

*Alimentary Canal.*—A. B. Thrasher <sup>9</sup><sub>Oct. 25</sub> reports 2 cases of salivation due to intra-nasal disease. He thinks the cause of the nasal reflex was two-fold: primarily, a diseased condition of the nasal respiratory tract; secondarily, an abnormal irritability of the central nerve-ganglia.

*Ear.*—William H. Daly <sup>771</sup><sub>Jan.</sub> arraigns the otologists on the charge of negligence in the treatment of naso-pharyngeal disorders in connection with ear diseases. He asserts that 80 per cent. of the inflammatory diseases of the ear have their origin in the naso-pharynx. Roosa and Pomeroy, in retort, cite cases where aural troubles have been caused by intra-nasal cauterization and other operative measures.

Holger Mygind, <sup>771</sup><sub>Mar.</sub> of Copenhagen, and T. B. Shapleigh <sup>82</sup><sub>Apr. 26</sub> also oppose Daly's attacks.

Mygind quotes numerous authorities to prove that otological works lay great stress upon diseases of the naso-pharynx as causes of ear disease and strongly recommend an examination of this cavity. This is especially the case since Wilhelm Meyer, of Copenhagen, wrote his memorable essay on adenoid vegetations and described his operation. While entirely agreeing with Daly as to the great value of practical therapeutics in this region, he also states that any otologist can show numerous examples, even in cases in which the ear disease is of recent date, where proper surgical treatment of even very prominent naso-pharyngeal

anomalies, in patients with certain diseases of the tympanic cavity, not only did not improve the patient's hearing, but did not even arrest the progress of the deafness. As an example of this, he relates a case taken from his own case-book.

Mygind approves strongly the theory brought forward by Beverley Robinson in the discussion on Daly's paper, viz., that co-existing diseases of the tympanic cavity and the nasal and naso-pharyngeal regions may only be synchronous. The co-existence of diseases of the naso-pharynx and the middle ear may then be synchronous in that they both are signs of a general disposition to catarrhal disease of the two cavities, anatomically related to each other, or may be merely accidental. That this latter relation exists in many cases of disease of the internal ear there can be but little doubt, as patients with labyrinthic deafness may exhibit considerable changes of the nasal and pharyngeal regions without it being possible to bring the two diseases in connection, either through our acquaintance with the symptoms or the pathological process.

The experience of Sajous would tend to demonstrate that each of the views presented is entitled to legitimate recognition. His opinion, based on observations in private practice, therefore among patients who had received professional care under the best auspices for thorough treatment, is, that although otologists, as a rule, do recognize the importance of diseases of the naso-pharynx as etiological factors, the measures employed by them are seldom sufficiently active to produce anything but a temporary effect. On the other hand, the reckless work alluded to by Roosa and Pomeroy, and the paternity of which could possibly be traced to rhinologists, would suggest the "just middle," almost as rare in the practice of specialties in general as the still missing "missing link." From this experience Sajous has also learned that, in the treatment of nasal and naso-pharyngeal affections concomitant with or acting as causes of ear disease, the Eustachian promontory is to be constantly borne in mind, and, unless the seat of vegetations, should never be touched by the *active* agents used in treating the surrounding surfaces. Unless sclerosis of the most resisting type be present, the counter-irritation induced by applications of canthar, chromic acid, etc., to parts lying some distance from the promontory, seldom fail to produce perceptible benefit. This is especially

marked, for instance, when the anterior third of the inferior turbinated body is treated; while the middle turbinated body, owing to its intimate connection with the promontory posteriorly, is the most prone of the three to involve the Eustachian orifice in an active inflammatory process, if this happen to be induced by too active cauterization. Repeated depletions of the adenoid tissue by scarifications, the bleeding being encouraged a few minutes by the patient by means of the suction motion exercised when efforts are made to dislodge mucus from the naso-pharynx, is a measure he has found of great service when care is taken to avoid the sides of the pharyngeal vault, and therefore the Eustachian promontories.

*Eye.*—T. K. Hamilton<sup>11</sup><sub>June</sub> reports the following cases: 1. Empyema of antrum and unilateral hypertrophic rhinitis of left side, concentric contraction of the visual field for all colors, infra-orbital neuralgia. Evacuation of empyema and its cure was followed by cure of eye symptoms. 2. Ecchondrosis of triangular cartilage and chronic rhinitis, with asthenopia, pain in eyeball, injection of eyes when used for work, contraction of the visual fields. Eye symptoms disappeared on removal of growth. 3. Spine of bony septum causing chorea magna, asthenopia, subjective color sensation, sneezing. Cured by removal of spine. 4. Post-nasal growths in 106 cases; eye symptoms co-existed in 51; in 22, catarrhal conjunctivitis; in 7, follicular conjunctivitis; in 16, granular conjunctivitis; in 6, blepharitis.

*Genito-Urinary Apparatus.*—C. L. Dreese<sup>12</sup><sub>Feb.</sub> reports a case of incontinence in a boy of 7 years, due to chronic nasal catarrh. Cure followed treatment of nasal trouble.

*Heart.*—Stein<sup>385</sup><sub>No. 10, '99</sub> calls attention to the frequency of certain cardiac neuroses, due to nasal affections. Dreese<sup>12</sup><sub>Feb.</sub> reports a cardiac neurosis removed by removal of a spur of the septum.

*Nervous Symptoms.*—J. G. Abramson, of Kovno,<sup>11</sup><sub>May</sub> furnishes details of cases of epilepsy, catalepsy, bronchial asthma, and migraine, in which cure followed the treatment of nasal disease. Coupard and Saint Hilaire<sup>61</sup><sub>Feb. 20, '27; Mar. 6, '20</sub> record 21 cases of neuralgic headaches and migraine depending upon a nasal affection. E. M. Gilliam<sup>1</sup><sub>Aug. 9</sub> reports a case of tic douloureux cured by removal of a spur of the septum. W. F. Chappell<sup>1</sup><sub>June 28</sub> details the histories of a series of cases of neurasthenia and neuralgia from traumatism of the nasal passages. J. N. Mackenzie<sup>1</sup><sub>Aug. 16</sub> shows the intimate rela-

tionship between bulbo-nuclear disease and certain obscure neurotic conditions of the upper air-passages. F. H. Bosworth believed the case quoted to be one of neuritis rather than bulbar disease.

F. H. Bosworth<sup>1</sup><sub>July 5</sub> has only known 3 cases of chorea which had been sufficiently long under treatment to warrant the statement that they had been cured by intra-nasal treatment. Referring especially to epilepsy, he states that he has seen nothing in his own practice which warranted him in the belief that epilepsy should be regarded as a nasal reflex, although he believes that an intra-nasal condition is capable of proving a marked source of irritation in many of the nervous affections, and that an epilepsy may be aggravated by an intra-nasal morbid lesion, the removal of which may, to a certain extent, modify the appearance of the convulsions. That an epilepsy has ever been cured by intra-nasal treatment he thinks is open to very serious question. A case of mental weakness resulting from an enchondroma of the septum, with cure on removal of the growth, is reported by W. Peyre Porcher.<sup>61</sup><sub>Apr. 19</sub> Ernst Winckler, of Bremen,<sup>81</sup><sub>Oct. 25; Nov. 1</sub> shows the relation between stammering and nasal affections. Polo<sup>127</sup><sub>Sept. 9, '89</sub> reports a case of hysteria cured by cauterization of the inferior turbinated body, and one of asthma permanently relieved by ablation of nasal myxomata.

E. M. Gilliam<sup>1</sup><sub>Aug. 9</sub> reports a case of tic douloureux resulting from an exostosis of the septum, and completely relieved by removal of the growth.

*Respiratory Organs.*—L. Berberoff<sup>551</sup><sub>No. 26</sub> describes a case of cardiac asthma and pseudo-croup due to hypertrophy of the turbinated bodies with stenosis. E. Schmiegelow<sup>187</sup><sub>July</sub> presents an able and temperate discussion of the question of nasal reflexes, and a series of observations on nasal asthma. He cites 514 cases of chronic rhinitis and 139 of nasal polypi, 8 per cent. of the former and 22 per cent. of the latter being subject to asthmatic attacks, making 71 cases in all. In 50 cases in which local treatment was carried out, cure resulted in 32, improvement in 11, and in 7 there was no improvement. In the unsuccessful cases the author considers failure due to chronic bronchitis, some emphysema having developed, or to the nasal disease being merely an accidental complication.

J. E. Schadle<sup>61</sup><sub>Mar. 1</sub> gives an exposition of the relations of cough to morbid nasal conditions, with cases. A series of observations, strengthened by those of other laryngologists, confirmed his con-

viction that not enough attention is given to interrogations of the nasal passages when cases of cough present themselves. He complains that we seem to lose sight of the essential office of the nose as it presides over the act of respiration, and that an abnormality of its structures may either directly or sympathetically interrupt the physiological processes of the organs which come under its domain. Experience bears him out in the statement that in conditions where specific organic changes of the lungs are not manifest, a cough, spasmodic in character, accompanied or not by temporary alterations of the voice or of the function of respiration, is frequently, if not invariably, of nasal origin. To practically demonstrate the importance of this statement, he relates the histories of several cases which certainly possess the average amount of interest.

Ruault <sup>136</sup><sub>No. 11, '89</sub> reports several cases of severe laryngeal spasm (in one case tracheotomy was necessary) that were directly traceable to nasal disease. The spasm ceased after cure of nasal trouble. Casselberry <sup>9</sup><sub>Feb. 22</sub> reports 2 cases of hysterical aphonia cured by cauterization of the inferior turbinated bodies.

Beverly Robinson <sup>59</sup><sub>Apr. 19</sub> ably reviews the status of reflex neuroses of the respiratory tract and the forms of treatment proposed and disposed of within the last few years. He very appropriately remarks: "By all means let each one of us look for peripheral irritation in the nose and throat when it seems proper so to do, as a source of disease elsewhere, and when discovered let us treat it rationally, judiciously, and effectively; but not allow ourselves for one moment to believe that the nose or throat, any more than any other organ of the body, is always diseased and should always be treated, either medically or surgically. Keep the general economy in good working order, with some special attention to each organ in a suitable degree and when it is really required, and, take my word for it, there will be much less to do for the rhinologists and for other exclusive specialists, and the majority of people will enjoy more peace of mind and health of body.

"To quote from a late editorial of the London *Lancet*, and apply it to the subject of debate, I may well add that the study of throat disease 'has proceeded along very narrow lines, and pathological theories have been formulated upon insufficient and often erroneous data, and made the basis of universal treatment.' Some

of these views have already 'been proved to be wrong, while others are, on the surface, of such an improbable character that they should be received only on the production of irrefutable proof of their correctness.'

"Would that I could bring to bear on this subject Goodell's brilliancy of interpretation, and conclude my paper with watch-words analogous to those he has furnished the gynæcologists with as broad helps to diagnosis! We may, however, paraphrase one of them with advantage, which is this: Always bear in mind that men, women, and children have some organs outside of the nasal cavities.

"In conclusion, it is well to bear in mind that evidence is forthcoming that the abuse of intra-nasal treatment may carry with it unpleasant consequences. In corroboration of this, I quote from Rethi, of Vienna, who enters a protest against the indiscriminate use of the cautery and snare in the treatment of intra-nasal disease. Though neuroses arising from disease of the turbinated bodies may often be cured by operation, he has noticed that in some cases they are increased, and that reflex conditions may even be originated by the cicatricial tissue which forms after operations."

#### DISEASES OF THE ACCESSORY CAVITIES.

Schech, of Munich, <sup>136</sup><sub>Nov. 1</sub> gives the following as the order of frequency of affection of the sinuses: disease of the antrum is most frequently found; after that, the frontal sinus, ethmoidal cells, and, rarest of all, the sphenoidal sinus.

*Differential Diagnosis.*—Max Schaeffer, of Bremen, <sup>69</sup><sub>Oct. 9</sub> discussing the differential diagnosis of diseases of these sinuses (with the exception of the maxillary antrum), relies chiefly on the situation of the pain and on the spot where the purulent discharge is noticed. In the case of the *frontal sinus* the pain is at the root of the nose and in the supra-orbital region, and the pus is found between the septum and the middle turbinated body. In disease of the *sphenoidal sinus* the pain is more in the middle of the head, and radiates to the occiput, neck, and supra-orbital region, the discharge being usually seen on the roof of the naso-pharynx, more rarely in the choanæ, between the superior and middle turbinated bodies. When the *ethmoidal sinuses* are affected, the pain is referred to the cheek and infra-orbital region, and the discharge is



seen between the middle and inferior turbinated bodies. In long-continued disease of the *frontal sinus*, swelling, slight œdema, and tenderness over the roof of the nose occur, whereas in *ethmoidal cases* these symptoms are rather to be sought in the infra-orbital region.

*Empyema of the Antrum.*—F. Semon, of London, <sup>22</sup><sub>Jan. 8</sub> in discussing the etiology of this disease, states that by far the greater number of authors agree with Fränkel, that the disease usually arises from dental causes,—caries, alveolar periostitis, etc. Thus, Christopher Heath, Lublinski, MacBride, Krieg, Ingals, Moritz, Schmidt, Schech, Walb, Boyer, Heryng, and even Semon himself, support the theory of dental origin. On the other hand, Ziem, Bronner, and Krause lean more toward Zuckerkandl's theory of the nasal origin of the trouble, while Friedländer found but 1 case in 16 of dental origin. Bosworth, <sup>99</sup><sub>June 26</sub> in 18 cases observed, found 6 due to nasal polypi, 5 following acute rhinitis, and 7 complicating hypertrophic rhinitis. In no case was there any prominent suggestion of carious teeth as an operative cause.

M. R. Brown, of Chicago, <sup>1</sup><sub>July 19</sub> in 21 cases, has found 9 consequent on an attack of acute rhinitis, and 2 cases succeeding an attack of *grippe*. T. M. Hardie <sup>779</sup><sub>Sept.</sub> details at length the dry method of treatment, in which one careful removal, by washing, of all the pus is followed by insufflation of iodoform, iodol, or aristol to the cavity of the antrum, by means of a Kabierske powder-blower. Jos. H. Bryan, <sup>81</sup><sub>Apr.</sub> of Washington, D. C., reports a cure by this method. Krause, of Berlin, <sup>69</sup><sub>July 10</sub> the author of this treatment, has cured 7 cases, a few in two weeks, and all but 2 in five months. O. Chiari, of Vienna, <sup>81</sup><sub>Nos. 48, 49, 59</sub> gives a review of the subject, detailing the different modes of treatment, with cases and results. Hansberg, of Dortmund, <sup>385</sup><sub>Nos. 1, 2</sub> gives directions for probing the maxillary antrum and other sinuses.

*Tumors of the Antrum.*—D. W. Yandell, of Louisville, <sup>224</sup><sub>June 21</sub> reports a case of angioma of rapid development. The nose and upper jaw were pushed to one side. The mass was removed as far as practicable, but the deformity of the face continued. A. Lücke, of Strasbourg, <sup>301</sup><sub>B. 30, H. 1, 2</sub> reports a case of angioma ossificans. Abundant hæmorrhage occurred after operation, which was only arrested by iodoform tampons. Some weeks later, a second operation was done, followed by great hæmorrhage; tampons and manual com-

pression had to be applied, and injections of camphor and transfusion were necessary. The tampons were left *in situ* for four weeks. Three months later the patient was discharged,—cured. P. Heymann, of Berlin, <sup>41</sup><sub>July 14</sub> reports 1 case of cyst and 1 case of polypus. Rutten <sup>288</sup><sub>June 8</sub> reports a case of myxoma in a man 54 years old, which had caused empyema of the antrum. Cure followed its removal. P. Michinard, of New Orleans, <sup>12</sup><sub>Sept.</sub> reports a case of fibromyxoma, with operation and recovery. Ochsner <sup>779</sup><sub>Dec., '89</sub> reports 2 cases of fibrosarcoma, with operation and recovery. C. Van Zwaluwenburg <sup>185</sup><sub>Mar.</sub> reports a case of sarcoma, with successful operation. There was return of the growth. The extension of the growth was backward, instead of forward, in the path of least resistance. Death ensued seven months after operation.

*Abscess of the Frontal Sinus.*—George A. Richards, <sup>61</sup><sub>Mar. 29</sub> reports a case in which the patient had a swelling at the root of the nose on the right side, which gradually enlarged without pain, but with a feeling of distension in the frontal region. He had occasional flushings, but never had any chilly feelings. The swelling was about the size of a small cherry, being larger in the evening than in the morning. The external swelling was opened from without, and the entire track washed out with a solution of carbolic acid. A drainage-tube was put into the nose through the opening, and the parts cleansed thrice daily. The tube was removed, and the wound healed in less than a month. A. G. Miller <sup>2</sup><sub>Feb. 22</sub> reports a case where he trephined the frontal sinus, on account of obstinate pain over that region. Curiously enough, on the removal of two or three teeth, in the belief that the condition might be due to abscess of the antrum, pus was found to be present, but its free escape did not effect a cure. The pain returning, the naso-frontal region was trephined in the middle line. Pus escaped freely and the patient was cured.

Panas calls attention to the difficulty of diagnosis in cases of abscess of the frontal sinus, which point on the edge of the orbit and have not their origin in alterations of the anterior nares. Panas opens the abscess externally and adjusts a drainage-tube just long enough to reach to the sinus, as he considers it dangerous to introduce it within the sinus from the nasal passage. He washes the cavity with a weak solution of biniodide of mercury. He notes one symptom which is invariably present,

—violent pain in the course of the infra-orbital and nasal nerves. (Report of Gouguenheim, corresponding editor, Paris.) F. Schanz<sup>21</sup><sub>Sept.15</sub> notes 2 cases in which periostitis of the roof of the orbit followed empyema of the frontal sinus.

*Osteoma of the Frontal Sinus.*—Stanley Boyd<sup>6</sup><sub>Sept.20</sub> reports a case, with removal by operation. John Berg, of Stockholm,<sup>371</sup><sub>V.22,'89</sub><sup>11</sup><sub>Sept.</sub> reports a case of multiple osteomata. Thirteen tumors were removed by trephining the sinus, which was dilated principally toward the cranial cavity. The dura mater was exposed during the operation, but the patient recovered.

*Affections of the Sphenoidal Sinus.*—John Berg<sup>11</sup><sub>Sept.</sub> reports a case of hydrops of the sphenoidal sinus in a woman aged 25. The patient had violent headache for ten years, with feeling of pressure over the eyes, increasing amaurosis from atrophy of the optic nerve, diminution of the sense of smell, and now and then abundant watery discharge from the nose. The patient was almost totally blind, without other cerebral symptoms; the roof of the nasopharyngeal cavity was slightly depressed, and there was some exophthalmos. The eyeball was removed and the sphenoid cavity trephined through the posterior part of the internal wall of the orbital cavity, after which operation an abundant yellowish fluid filled the orbital cavity, showing distinct pulsation. Drainage was followed by recovery, but the blindness persisted. Quénu<sup>3</sup><sub>Oct.22</sub> reports a case of caries of the walls of the sphenoidal sinus, in which drainage was used with success after opening up the fistulous tract.

E. Berger<sup>67</sup><sub>Mar.30</sub> advises against the opening of the inferior wall of the sinus through the naso-pharyngeal cavity, as recommended by Schech; he considers it dangerous or impracticable. The opening through the orbit is hardly to be commended, and is only justifiable in cases of caries or necrosis. The opening should be made through the nares, near the septum, on a level with the middle turbinated bone, perforating the ossicles of Bertin, which gives access to the sinus. This plan is recommended by Zuckerkandl.

Max Schaeffer<sup>69</sup><sub>Oct.9</sub> maintains that it is not possible to syringe out the frontal or ethmoidal sinus without making an artificial opening. He reports 7 cases of disease of the sphenoidal sinus, of which 6 were cured; in 1 the result was unknown.

## NASAL THERAPEUTICS.

*Cocaine*.—H. Zwaardemaker<sup>365</sup><sub>No. 13</sub> employs cocaine in the nose and pharynx in the form of a 5-, 10-, or 20- per-cent. powder, with starch. This is insufflated with a powder-blower, the nasal cavity having been cleansed of mucus. These insufflations sometimes afford great relief in nervous asthma. S. S. Jones, of New York,<sup>59</sup><sub>May 2</sub> has found the temporary anæsthesia by cocaine to be followed by an intense, lasting pain. In one case the application of a 4-per-cent. solution to the uvula was followed by a most intense pain in the palate and teeth, which lasted for two or three days, and which the patient described as resembling the pain of a frozen member "thawing out."

*Medicated Nasal Cylinders*.—Scanes Spicer<sup>2</sup><sub>Sept. 13</sub> substitutes for the ordinary medicated nasal bougies, hollow glyco-gelatin medicated cylinders, which are inserted into the nares on hollow oval vulcanite plugs. The plugs and cylinders are of graduated sizes. Each plug is provided anteriorly with a little thread, which can be attached to the fellow of the opposite side.

*Menthol*.—J. Lennox Browne,<sup>22</sup><sub>Jan. 3</sub> recommends menthol in acute colds and influenza. A 10- to 20- per-cent. solution in almond-oil, liquid vaseline, or one of the many odorless paraffine compounds, may be sprayed into the nose or throat. Seth S. Bishop, of Chicago,<sup>760</sup><sub>Aug. 9</sub> recommends it also in chronic hypertrophic rhinitis, atrophic rhinitis, and pruritus nasi. In acute rhinitis, a drachm or two (4 to 8 grammes) of the crystals in a wide-mouth screw-cap vial, covered with cotton, is a convenient device.

*Morphine*.—Carl von Klein, of Dayton,<sup>82</sup><sub>Oct. 25</sub> has administered morphine through the nasal mucous membrane in more than 100 cases with very satisfactory results. The dose is divided into two equal parts, and used as snuff. The action of the drug is more prompt than when administered either by mouth or hypodermatically.

*Pyoctanin*.—Bresgen<sup>69</sup><sub>No. 24, Aug.</sub> recommends pyoctanin as an antiseptic in diseases of the nose and throat. The substances comprised under this name are pure aniline dyes and have been recommended by Stilling as efficient and harmless antiseptics. Bresgen has recently employed them with success in the nasal cavity, and found that they prevented suppuration after the application of chromic acid or the galvano-cautery to the mucous membrane.

His method is to rub the cauterized patches with pyoctanin cotton moistened in a 1 to 500 solution of the drug and applied on a nasal probe. He cites 18 cases in which the swelling of the mucous membrane and consequent obstruction in breathing and headache, which are so frequently observed after the use of the galvanocautery in the nose, were absent or much less marked. While in ordinary cases the eschar could seldom be detached before the fourth day and often not until the sixth day, in the cases treated with pyoctanin this was possible as early as the second day. The detachment of the eschar is made carefully with a probe around which is wrapped some pyoctanin cotton dipped in the above solution. After its removal the wound is treated with the pyoctanin solution, and the affected nasal cavity plugged for two hours with pyoctanin cotton. Later, a salve of lanolin 25 grammes (6 drachms), paraffine liquid, 5 grammes ( $1\frac{1}{4}$  drachms), and rose-oil, 1 drop, is applied every half an hour. The treatment with pyoctanin is continued daily for six days, and then on alternate days, after which Bresgen recommends insufflation of a powder consisting of equal parts of boric acid and potassium sozoiodol, for the purpose of diminishing the secretion. The same excellent results were obtained from pyoctanin after application of chromic acid to the nasal mucous membrane, and after cauterization of the nasopharynx with carbolic acid. In a case of laryngeal syphilis it produced marked diminution of the secretions and crust formations. The chief advantage of pyoctanin is to prevent the œdematous swelling of the mucous membrane after the application of the cauter, especially if the nasal cavity is much stenosed, to prevent adhesion of the wounded surfaces, and to prevent the inflammatory phenomena and the pain and discomfort which is frequently experienced after this operation.

*Trichloroacetic Acid*.—H. A. Ehrmann, of Heidelberg, <sup>31</sup>Mar. 4 reports success with trichloroacetic acid (Merck) as a cauterant in diseases of the nose and throat. The crystals are applied by means of a silver applicator. He has used it in 140 cases. In 87 cases the cauterization was made but once; in 30 cases, twice; and in the remainder from three to five times. The cauterant effect is more localized than that of chromic acid, and a thicker eschar is formed. As an astringent, Ehrmann employs the acid in the following mixture:—

R Iodine, . . . . .	2 grains	( 0.13 gramme).
Iodide of potassium, . . . . .	3 grains	( 0.19 gramme).
Trichloroacetic acid, . . . . .	4½ grains	( 0.30 gramme).
Glycerin, . . . . .	7½ drachms	(30.00 grammes).—M.

Von Stein and Stanislaw, of Moscow,<sup>11</sup><sub>June</sub> recommend it not only in hypertrophies, but in acute rhinitis (coryza), ozæna, and adenoid vegetations.

W. F. Dudley<sup>157</sup><sub>Sept.</sub> also recommends this drug as a substitute for chromic acid. It occurs in colorless rhomboidal crystals, soluble in water and alcohol. It should be applied by means of a sound having a small cup-shaped extremity in which a number of crystals can be inserted. Before using it on the mucous membrane, a 10-per-cent. solution of cocaine should be employed. After application of this cauterant, a bright, ivory-white scab is formed, which remains localized to the spot. It differs from the slough resulting from chromic acid, in that it is uniformly thick, has no odor and no inflammatory after-effects, in this respect being preferable even to the galvano-cautery. In 140 cases no hæmorrhage was produced, the scar disappearing in five or six days. So little pain results that in the pharynx and mouth it can be used without the aid of cocaine.

In ozæna a weak solution ( $\frac{5}{10}$  of 1 per cent.) should be rapidly brushed over the diseased mucous membrane. It is stated that this treatment, if repeated daily, corrects fætor, softens the crusts and prevents their formation. L. Réthi, of Vienna,<sup>113</sup><sub>Oct. 56, Nov. 2</sub> views it with favor, after using it 214 times on 68 patients.

#### NEW INSTRUMENTS AND PROCEDURES.

W. Freudenthal<sup>1</sup><sub>June 28</sub> offers the following suggestions to those using Voltolini's method of transillumination. (See ANNUAL, 1890, vol. iv, D-32.) An absolutely dark room is essential when examining the antrum, but not for the larynx; to prevent breaking the lamp, always use a rheostat; remove patient's tooth-plate from his mouth before examining his antrum. Trautmann, of Berlin,<sup>69</sup><sub>Apr. 10</sub> offers a new electrical illuminator. A. T. Veeder, of Schenectady,<sup>1</sup><sub>Apr. 5</sub> has devised a new form of electric-lamp attachment, in which all obstructions are removed out of the way of the left hand of the operator. The attachment of the mirror-bar is also out of the way.

L. L. Palmer, of Toronto, <sup>59</sup><sub>Jan.25</sub> has invented a self-retaining nasal speculum for use in operations. It consists of a modification of an eye speculum, and when introduced stands from the nostril upward over the nose. R. C. Myles, of New York, <sup>771</sup><sub>July</sub> presents a speculum which is simply a combination of Browne's, Simrock's, and Fränkel's, using the Browne handle to be attached by bayonet-joint to any of the nasal blades of the above-mentioned specula. Flatau, of Berlin, <sup>4</sup><sub>June 23</sub> has devised a retention apparatus for Voltolini's nasal speculum. A broad, flat spring, with pads on either end, passes from the forehead to the occiput.

I. Dionisio <sup>739</sup><sub>Apr., May</sub> presents a new compression method, which, according to the author, is useful in cases of chronic hyperplastic rhinitis and epistaxis. It consists in the application of an India-rubber sac surrounding a canula, into which water is injected so as to produce dilatation of the sac. Respiration is carried on through the canula. Massei, corresponding editor, Naples, reports the above, and thinks the idea an excellent one, but he has more confidence in compressed air (by means of a common pneumatic apparatus), which he employed and recommended many years ago.

Deelen <sup>583</sup><sub>Apr.</sub> suggests the use of Bellocq's canula in dislodging and exposing nasal polypi. The canula is introduced in the usual manner, and the thread with tampon attached is drawn forward through the nares. The tampon dislodges and exposes the polypi to view, when they may easily be removed with a snare.

L. Réthi <sup>8</sup><sub>No.4</sub> has invented a new snare for removing nasal polypi. The anterior end of the instrument is jointed and movable. It may be used with the cold wire or galvano-cautery. K. P. Battle, of Raleigh, <sup>43</sup><sub>July</sub> describes a somewhat similar instrument for use with the cold wire. Greville MacDonald, of London, <sup>2</sup><sub>Sept.20</sub> has designed a snare which, he claims, combines the advantages of the Jarvis snare and Mackenzie's cog-wheel écraseur. In use, the hand holding and operating the instrument is below the line of vision.

W. C. Jarvis <sup>1</sup><sub>June 7</sub> has constructed a novel hæmostatic septum compressorium and an antiseptic tubular crown-drill for cutting away septal obstructions. A. T. Veeder <sup>1</sup><sub>Sept.20</sub> has devised several new nasal cutting instruments or forceps.

E. Pins, of Vienna, <sup>84</sup><sub>Apr.19</sub> describes what he calls a new method of irrigating the nose. The apparatus consists of a bottle the cork

of which has two perforations, in which are fixed two tubes. One of them ends in an olive point, and is applied to the nasal cavity. In the other the patient blows as strongly as possible with the mouth. During the act of blowing the soft palate closes the nasopharynx and the fluid returns by the other nasal cavity.

J. E. Boylan, of Chicago, <sup>61</sup><sub>Aug. 23</sub> anæsthetizes the pharyngeal tonsil by injecting into it about 20 minims (1.3 grammes) of a 10-per-cent. solution of cocaine by means of a highly-curved pharyngeal canula, screwed in the usual way to the barrel of a hypodermatic syringe.

E. Holden, of Newark, <sup>59</sup><sub>Nov. 8</sub> has devised a flexible curette, and F. C. Raynor, of Brooklyn, <sup>1</sup><sub>Aug. 30</sub> and James E. Nichols, of New York, naso-pharyngeal forceps for removing adenoid vegetations.

P. Dubois, of Paris, <sup>71</sup><sub>June</sub> has invented an apparatus for draining the antrum. It consists of an arched plate, resting on the vault above and fastened to the teeth on either side below. From its upper surface a perforated metallic drainage-tube arises and, penetrating the tooth-socket, reaches up into the antrum.

M. Braun, <sup>286</sup><sub>Oct.</sub> and J. Herzfeld, <sup>41</sup><sub>Nov. 6</sub> have derived benefit from massage of the nasal cavity in various disorders thereof.



# DISEASES OF THE PHARYNX, TONSILS, AND SOFT PALATE.

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## PHARYNX.

ENCYCLOPÆDIC articles upon the pharynx and reviewing its diseases have appeared during the year by John N. Mackenzie,<sup>1143</sup> D. B. Delavan,<sup>1143</sup> and B. Fränkel.<sup>1142</sup>

Lennox Browne<sup>2</sup><sub>Sept. 13</sub> proposes to apply the term "faucial and pharyngeal tenesmus" to those cases in which there is a continual inclination to void or swallow an imaginary foreign body, accompanied by more or less cough, straining, and pain, either after or independent of functional exercise of the voice, the excretion of more or less mucus, and occasionally by the expectoration of small quantities of blood. "Tenesmus" would not only apply to the condition known as "globus hystericus," but would embrace the various subjective throat symptoms usually pronounced neurotic. The objective causes of these symptoms, described by Browne in 1880, are mainly three: (1) hypertrophy of the lymphoid tissue at the base of the tongue; (2) varix of the vessels in the same region; and (3) congestion, fullness, and sometimes evident enlargement of the thyroid gland. Other conditions causing tenesmus are overuse or wrong use of the voice and improper deglutition. The underlying constitutional causes are many. Prominent among them are a general varicose diathesis, torpidity of the liver, constipation, and dyspepsia; occasionally cardiac disease is present, and, rarely, diabetes,—conditions implying weakness of the vasomotor system. It sometimes follows epidemic influenza, and is seen in connection with nasal stenosis. These cases are sometimes accompanied by slight recurrent hæmorrhages, bleeding coming from the base of the tongue. Treatment should be both local, in removal of diseased tissues, and general, in correction of existing faults of health and of local function.

*Erysipelas*.—Massei<sup>8</sup><sub>Apr.20</sub> bases his observations upon 14 original cases, and describes the symptoms distinctive of erysipelas of the pharynx as follows: 1. Swelling of the mucous membrane is pronounced from the outset, and generally starts from the adenoid tissue at the base of the tongue, soon reaching the epiglottis and the aryepiglottic folds. The earliest symptom, therefore, is dysphagia. 2. The ready extension of the swelling explains the suddenness with which œdema of the larynx may threaten life. 3. The early occurrence of high temperature, which varies as in ordinary erysipelas. These three symptoms distinguish erysipelas from simple phlegmonous laryngitis.

Erysipelas of the pharynx may be mistaken for common angina, but may be recognized by the high temperature, the involvement of the larynx, and the severe prostration. There are two forms: one in which the local symptoms, such as dysphagia and laryngeal œdema, predominate, and the other in which the general symptoms, such as adynamia and pneumonia, are more pronounced.

For treatment, applications of ice, external and internal, are advised. Laryngeal stenosis should be relieved by tracheotomy. [It is in this class of cases that brilliant results have been obtained in this country by the use of the O'Dwyer tubes.—ED.]

*Vascular Disorders*.—Pope<sup>2</sup><sub>Nov.23, '99</sub> reports an interesting case in which a thrombus of the vertebral artery, pressing upon the glossopharyngeal nerve, caused unilateral loss of taste at base of tongue.

Raulin<sup>780</sup> reports a case of syphilitic ulceration of the posterior wall of the pharynx which extended to the carotid, causing death.

Richardson<sup>61</sup><sub>Aug.2</sub> describes a case of aneurism of the pharynx in which the tumor extended from a point a little to the right of the median line to the right lateral wall of the pharynx, and from the level of the base of the tongue to a line corresponding to the lower border of the soft palate; dimensions, 2 by 1½ centimetres. There was distinct pulsation and a high-pitched bruit. Pressure upon the common carotid caused cessation of pulsation. While cases of pulsating arteries in the posterior wall of the pharynx are not uncommon, such a tumor as Richardson's is very rare.

Farlow<sup>99</sup><sub>July 3</sub> reports 8 cases of pulsating arteries in the posterior wall of the pharynx, in addition to the 5 cases already published by him.

*Foreign Bodies.*—Postnikoff<sup>11</sup><sub>Sept.</sub> reports a case in which death was caused by the impaction of a large copper coin in the lower pharynx of an adult, and Shoemaker<sup>112</sup><sub>Feb.</sub> describes the case of a child of 3, in whose throat a thin brass disk,  $\frac{3}{4}$  inch in diameter, had remained lodged behind the velum palati for eight months.

*Retropharyngeal Abscess.*—Northrup<sup>1141</sup><sub>Mar. 28</sub> reported a case of retropharyngeal abscess, tubercular meningitis, and calcareous bronchial lymph-nodes from a boy 3 years old. No trace of tubercular disease was discovered during life, although the abscess was carefully examined. Post-mortem division of an apparently healthy bronchial gland revealed disease. The case emphasized (1) the importance of searching for the old tuberculous process present in a given case, and (2) the fact that the oldest process will often be found in the lymph-nodes adjacent to the respiratory tract.

Bokai<sup>1144</sup> reports a case of supposed retropharyngeal abscess in an infant, in which the tumor caused suffocative attacks. On incision no pus was discharged. Tracheotomy was performed. The tumor disappeared without suppuration, and the child recovered. In these cases Bokai prefers internal incision to external.

*Tumors.*—Laquer<sup>116</sup><sub>U. S.</sub> states that in carcinoma of the posterior wall of the pharynx, operated upon by subhyoidan pharyngotomy, the results, as shown by a series of 28 cases, are unfavorable. Half of all the cases died under operation, the other half from relapses; only 1 case was definitely cured. Cheatham<sup>224</sup><sub>Dec. 7, '89</sub> reports 2 cases of naso-pharyngeal tumor: one in a boy of 12,—a fibrosarcoma; the other in a man of 67, nature unknown. Lublinski,<sup>4</sup><sub>p. 309</sub> in reporting a case of carcinoma of the pharynx which had interfered with the movements of the arytenoids, expresses the belief that carcinoma has a special predilection for the posterior plate of the cricoid cartilage. Otto<sup>20</sup><sub>B. 115, p. 272</sub> refers to a case of pilose pharyngeal tumor operated upon by him seventeen hours after birth, to relieve dyspnoea.

*Tuberculosis.*—Aigre<sup>41</sup><sub>Sept. 22</sub> concludes that tubercular disease of the pharynx is rare; that it may exist without the presence of tubercular disease of the larynx; that it is, histologically, an acute ulcerative tubercular infiltration; that it is mainly superficial; that other micro-organisms are present in great numbers, besides the tubercular bacilli, and that they contribute to the process of ulceration; that the otalgia which so often complicates it is caused by extension of the disease into the Eustachian tubes; and,

finally, that infiltration of the glands of the neck is not a constant symptom.

Gleitsmann<sup>1</sup><sub>Oct. 11</sub> reports a highly interesting case of primary tuberculosis of the pharynx, which was treated, after the methods of Krause and Heryng, by thoroughly scraping the ulcers and then rubbing into them lactic acid, with occasional application of the galvano-cautery. Perfect healing resulted, and for two years there had been no recurrence of the disease.

*Syphilis*.—Gerber,<sup>45</sup><sub>Sept. 15, '89</sub> in an elaborate article, reports 27 cases of syphilis of the naso-pharynx, and concludes as follows: 1. Syphilis of the naso-pharynx occurs most commonly between the 1st and 3d, and the 8th and 14th years. 2. Previous mercurial treatment does not predispose to tertiary syphilitic diseases of the nose, naso-pharynx, and pharynx. 3. In syphilis of the naso-pharynx examination of the rest of the body may give negative results. 4. The presence of ozaena is not characteristic of syphilis. 5. Flattening of the nose does not depend upon deformities of the nasal septum. 6. Syphilis of the naso-pharynx may exist without the presence of an apparent change in the lower pharynx. 7. Rhinoscopic examination is necessary for the diagnosis of these cases. 8. Local and general specific treatment prevents further extension of the destructive processes, even where they have existed for several months, and is always successful where applied in time. 9. It is very desirable to prevent the cicatricial contraction which is apt to follow in these cases.

*Palatal Adhesions*.—Nichols<sup>1</sup><sub>Feb. 22</sub> proposes a new method for relief of adhesion of the velum palati to the pharyngeal wall: The pharynx having been cocaineized in cases where adhesion was tolerably complete, the thickness of the adhesion is ascertained by passing a curved steel bougie through the nostril into the naso-pharynx and palpating the end of it by means of the finger. An incision is then made in the median line, upon the end of the bougie. In the next step the process is the same as if the closure were only partial. An ordinary staphylorrhaphy needle, curved to the right or left, as required, is armed with four or eight strands of coarse suture-silk. It is then passed through the central opening into the naso-pharynx and carried as far as possible directly outward; then, by a turn of the handle, it is brought into the oropharynx; one end of the suture is then grasped, the needle with-

drawn, and the suture left in place. The ends of the suture are then tied near the central opening, leaving the loops loose enough to play freely through both perforations. If necessary, the same procedure is applied the opposite side; the knot is drawn into the naso-pharynx and allowed to rest above the adhesion; the suture is moved slightly every day, and in from ten to fourteen days healing takes place, a small canal remaining, slightly larger than the diameter of the suture. Traction is now made upon the loop toward the median line, in order to stretch the canal, and into it was introduced a staphylorrhaphy knife, curved on the flat; the tissue between the two openings is then cut through and the parts kept dilated until healed. The principle of the operation is the same as that applied in operating upon webbed fingers.

#### TONSILS.

B. Fränkel<sup>1142</sup> and Delavan<sup>1143</sup> have contributed exhaustive articles upon the tonsils, embracing its anatomy, surgical anatomy, pathology, and the etiology, symptomatology, and treatment of many of its diseases. Donelan<sup>2 May 17</sup> reports a case in which, having excised two normally-situated tonsils, he found another pair of symmetrically-placed tonsils low down in the pharynx. Each of these was about the size of a filbert, and their lower extremities overhung and almost hid from view the entrance to the larynx. In none of the cases reported by Carroll Morgan and Jurasz was the supernumerary tonsil symmetrical.

*Tonsillitis*.—Gouguenheim<sup>37 Sept., '89</sup> extols the use of salol in tonsillitis, and concludes as follows: 1. Salol acts beneficially in acute anginas of whatever cause. 2. It quiets the pain and dysphagia with the greatest rapidity. 3. In quieting the pain it may shorten the duration of quinsy. 4. It lowers the temperature. 5. In nearly all cases it diminishes the duration of the angina. 6. In order to attain these results, the dose should not be less than 60 grains (4 grammes) daily. Wright<sup>5 Aug.</sup> supports the views expressed by Gouguenheim.

In an interesting article entitled, "An Inquiry into the Relationship of Amygdalitis to the Cerebro-Spinal Centres," J. Richardson Parke<sup>1 July 26</sup> expresses surprise that attention has not been directed more specifically to the question of idiopathic neurotic influence in the etiology of acute tonsillitis. He calls attention to the fact that

tonsillitis is most common in young and strumous subjects, and that, while the same exposure in one individual will invariably produce tonsillitis, in another it will always produce simple pharyngitis. It may also be due to sudden mental or physical shock.

“The glosso-pharyngeal nerve rising from the gray nuclei in the floor of the fourth ventricle is very closely connected with the pneumogastric, sympathetic, and facial nerves, and at the superior cervical ganglion it touches like the key of a battery the whole sympathetic system, both giving and receiving impressions; and, being a branch of the eighth pair, it also stands intimately related to the spinal accessory, which receives filaments from the lateral tract as far down as the sixth cervical, while its connection with the vagus renders the circuit complete and gives ground for the peculiar pathological phenomena referred to. In support of the theory of neurotic influence in the causation of amygdalitis, it may be observed that the lymphatics of the submaxillary base, as well as the buccal and salivary glands, are always more or less involved.”

The author reminds us that severe mental impressions are potent in inaugurating pathological processes in certain organs, and that an instinctive reflex act may override even the strongest efforts of volition. “As the existence and locality of the ano-spinal and vesico-spinal centres have long ago been demonstrated, it is not improbable that adeno-spinal centres also exist, any strong mental emotion acting upon which might readily affect the circulus tonsillaris, as it is well known to affect the vesical sphincters, and produce amygdalitis without any exposure. Indeed, Virchow, Carswell, and Vanzetti, in treating of lymphangeiectasis, definitely teach that the lesion may be produced by any cause, either mental or physical, affecting the general health, and Prof. Willard Parker, as long ago as 1856, speaking of concussion of the nerves, makes significant statements bearing in the same direction.

“The morbid anatomy and *rationale* of treatment is, first, sudden occlusion of the follicles induced by a mental impulse, transmitted to the motor nerves, with consequent retention and, at the same time, stimulation of secretion, which would account for the sudden onset of quinsy, followed by rapid inflammatory action, tumefaction, and suppuration of the tonsils, the glands of the mouth generally sympathizing and discharging excessive quantities of thick,ropy, and tenacious mucus.”

As to treatment, the first indication prior to the suppurative stage would be a powerful solvent of animal membrane, such as papaine, bicarbonate of sodium, or lactic acid. Systemically, agents which depress the motorial function of the spinal cord,—aconite, veratrum, pulsatilla. Good results are claimed from gentle but sustained opium narcosis, fortified to prevent nausea with spirit of ether or bromide, and accompanied by the solvent spray: the above to be used early in the disease, as the stage of suppuration is practically irremediable. The ideas expressed in this paper are suggestive, and the recommendations as to treatment worthy of consideration.

O. Chiari, <sup>8</sup><sub>No. 43, '89</sub> in a valuable article upon abscess of the pharynx, concludes: 1. That abscess seldom occurs in the tonsil. When localized in the tonsil it is usually small and near the surface. 2. Inflammation is generally localized toward the superior and outer part of the tonsil, and it pushes the tonsil downward and inward, and the anterior arch of the palate downward and forward into the buccal cavity. 3. The formation of pus can be recognized by the œdema of the uvula and arch of the palate, by lancinating, acute pain radiating toward the ear, and by fluctuation. These symptoms are sometimes deceptive, and in doubtful cases an exploratory puncture should be made directly backward, through the middle of the anterior arch of the palate, 2 centimetres deep. 4. Pus being found, the abscess should be opened by an incision through the tissues, immediately outside of the anterior pillar of the velum, and a little below the top of the tonsil. This incision should be made in cases where the swelling is marked, even if the presence of pus be not demonstrated. 5. Rarely the abscess points elsewhere than above. It is therefore necessary to make a thorough examination of the throat in order, if possible, to find the spot at which fluctuation may be felt.

Clark <sup>1</sup><sub>Apr. 26</sub> reports an interesting case of quinsy in a male infant 14 months old. Gooch <sup>2</sup><sub>Mar. 1</sub> makes an elaborate report upon an outbreak of diphtheritic tonsillitis in Eton College, the history and course of which was carefully studied by him, and the origin of the disease traced to infected milk. As the result of his analysis it appeared: (1) that infected milk was the cause of the disease; (2) that the water in which the pails were washed was not at fault; (3) that disease-germs can pass through the system of a cow and be ex-

creted in her milk in an active condition ; (4) that boiling the milk will destroy the vitality of the germs ; (5) that the disease was perfectly distinct from diphtheria, scarlatina, or follicular tonsillitis ; (6) that the disease was non-infectious from the fact that no one contracted it who had not drunk the milk. There was a suspicion that the infected cows had had access to the poison of scarlatina, and the author suggested the possibility that the germs of this disease may be so modified in their character in passing through the systems of the cows as to set up in the human being a milder and non-infectious disease, as in the case of small-pox.

Trumbull,<sup>11</sup><sub>Sept.</sub> of Valparaiso, reports a case of follicular tonsillitis followed by infective phlebitis. The patient, female, aged 54, had an attack of follicular tonsillitis, with considerable general disturbance. A week later, the throat not now being complained of, she began to suffer from pain and tenderness in the left calf. For some months previously the veins of the legs had been varicose. On examination several veins of the inner side of the left calf were found to be dusky, tender, and nodular, but there was no induration or tenderness above the course of the saphena vein. The next morning, a severe rigor having occurred the preceding evening, she complained of vomiting, headache, and general *malaise*, with pain of the left calf, which was swollen, hot, and the seat of cellulitis, extending over a surface the size of the palm of the hand, surrounding the obstructed veins of the previous day. Other severe rigors followed, and the prostration became extreme. Finally, pneumonia set in, and the patient died ten days after the first appearance of phlebitis. The author regards the follicular tonsillitis as the starting-point of a septic inflammatory process, infective organisms entering the blood at this point and finding a resting-place in the dilated veins, whence they were discharged throughout the body. Painter<sup>161</sup><sub>Oct., '90</sub> reports a case of quinsy which, one month after the attack, exhibited marked paralysis of the velum palati and pharynx.

Jeanselme<sup>100</sup><sub>Jan. 25</sub> presents an excellent article upon the entrance of infectious diseases through the medium of the tonsils and pharynx, in which he reviews the facts known as to chancre of the tonsil and tuberculosis of the pharynx, the method of development of diphtheria, actinomycosis, phlegmonous pharyngitis, angina Ludovici, and the connection of infectious tonsillitis with arthritis,



orchitis, and ovaritis. In order to avoid infection after exposure, antiseptic gargles should be used. As hypertrophied and inflamed tonsils offer the best nidus for the reception of noxious germs, such tonsils should be destroyed.

Thayer<sup>1</sup><sub>July 26</sub> reports seven cases of acute tonsillitis in which the attacks were associated with distinct symptoms of rheumatism, and which were successfully treated by remedies calculated to relieve the rheumatic condition, such as salicylate of sodium, acetate of potash, salol, and tincture of the chloride of iron. He refers to certain theories lately advanced as to functions of the tonsils, and quotes from the admirable prize essay of Eugene Hodenpyl (as yet unpublished) the following: "None of the theories thus far advanced to explain the functions of the tonsils are conclusive. The tonsils are not absorbing organs. They neither absorb fluids nor solid particles from the mouth, under ordinary conditions, nor do they take up foreign materials from the tissues in their immediate neighborhood."

*Tonsillotomy.*—In an exhaustive thesis upon the "Amygdalotomy in Chronic Hypertrophy of the Tonsils," Désiré<sup>100</sup><sub>July 29</sub> compares the results of tonsillotomy with those of the galvano-cautery, presenting his own views upon the subject, together with those of a large number of the most eminent specialists in Europe. He believes that the dangers of tonsillotomy have been greatly overestimated, that serious accidents due to it are rare, and that the results of galvano-puncture are less rapid, sure, and constant. Of the others with whom he has communicated, Sir Morell Mackenzie, in many thousand tonsillotomies, has never had an accident; he has never used galvano-puncture. Lennox Browne has had but two slight accidents in many thousand tonsillotomies; he considers galvano-puncture severe and painful, and generally declines to use it. Hermann Krause has never seen an accident from tonsillotomy and never uses the galvano-cautery. Schroetter has seen but 2 cases of hæmorrhage in many thousand tonsillotomies, and does not think that any good reason exists for supplanting that operation by the caustic method. Massei has seen but 4 cases of moderately severe hæmorrhage in 850 tonsillotomies. Capart has seen but one serious hæmorrhage in more than 2000 tonsillotomies; while it may be necessary occasionally to use the electric method, the latter is tedious, clumsy, and likely to result in abscess. Gouguen-

heim decidedly prefers tonsillotomy, although occasionally using the galvano-caustic method.

It therefore appears that, in a collection of cases probably aggregating 20,000 tonsillotomies, but 9 instances are recorded in which bleeding took place. In none of these cases was it fatal, and in several it was not serious. The author recommends that prior to tonsillotomy the patient should hold ice in his mouth for some time, and that following it for twenty-four hours cold, liquid food should be taken.

Quenu,<sup>3</sup><sub>May 14</sub> on the other hand, has entirely abandoned the tonsillotome for the cautery, which he uses alike upon the infant and the adult. It would be interesting to know upon what experience Quenu bases his somewhat advanced views. In the debate which followed the reading of his paper, Chauvel, Sée, and Verneuil strongly favored tonsillotomy. Lucas-Championnière feared tonsillotomy and removed but one tonsil at a time.

Moure<sup>908</sup><sub>Apr. 20</sub> reports the case of a child, aged 7, upon whom he performed tonsillotomy during an attack of acute tonsillitis. There was little immediate bleeding, but severe bleeding occurred during the night and recurred eight days later. It was due to a slight eschar and did not return.

Cuvillier<sup>14</sup><sub>Sept. 7</sub> reviews the theses of Quenu and Désiré, sums up the evidence in favor of tonsillotomy, as compared with other methods, for removal of the tonsils, and declares himself distinctly upon the side of the first-mentioned operation. Wright<sup>1</sup><sub>Aug. 30</sub> introduces a description of an electric tonsillotome, with a *résumé* of the question of hæmorrhage after tonsillotomy. A thorough search of the records of the last twenty-five years in the library of the Surgeon-General, Washington, has resulted in the discovery of 31 cases of hæmorrhage. Of these, fully one-third were controlled by such simple means as the application of ice, torsion of bleeding vessel, pressure applied to surface, and the use of local styptics. Several, on the other hand, were severe, and 2, as reported by Broca, were fatal. Of 1 so-called fatal case no details are given. The other was said to have been due to an anomalous distribution of the internal carotid. [It would be interesting to have more complete details regarding this case, as it seems to be unique. In the case of an anomaly of the carotid so pronounced as to cause it to be wounded by the

tonsillotome the artery could hardly escape injury by the galvano-cautery; such a condition could hardly fail to cause a visible amount of pulsation, which proper examination should demonstrate. When Mackenzie, Browne, Schroetter, Gouguenheim, Krause, Massei, and Capart together report about 20,000 tonsillotomies with but 7 cases of hæmorrhage, Schroetter having stated that his 2 cases were not serious, 31 cases of bleeding would represent, at the same ratio, about 88,500 tonsillotomies—certainly a strong argument in favor of an operation productive of so much relief.—Ed.] Wright prefers ignipuncture to tonsillotomy in the adult, but regards Knight's galvano-cautery snare as better than either. The chief objection which he makes to the latter is the extreme difficulty in the satisfactory adjustment of the platinum loop; the reflex movements of the patient's throat are often so pronounced as to render the procedure almost impossible. He therefore proposes a modification of the Mackenzie tonsillotome, in which the sharp edge of the cutting instrument is represented by a platinum wire, ingeniously connected with the poles of a battery. The instrument is applied in the same manner as the ordinary tonsillotome.

Pynchon<sup>61</sup><sub>Nov. 22</sub> advises that moderate hypertrophy of the tonsils in the adult be treated by dissecting the diseased tissue away with the galvano-caustic knife, the pharynx first having been anæsthetized with cocaine. Adhesions between the tonsil and pillars of the palate are first destroyed by the cautery, and then, the top of the tonsil being seized with a tenaculum, the tonsil is dragged toward the median line, and little by little its separation completed by repeated applications of the cautery knife, in from fifteen minutes to an hour. Succeeding inflammation is subdued by the wet pack at night and gargles of the bicarbonate of sodium. Later, gargles of chlorate of potassium are prescribed. The local reaction is sometimes considerable. But one tonsil should be removed at a time. He states that the operation is not so severe as might be supposed, and that the results are good.

*Tumors.*—Cases of sarcoma are reported by Mygind,<sup>11</sup><sub>Aug.</sub> Schmit,<sup>11</sup><sub>Aug.</sub> White,<sup>112</sup><sub>Jan.</sub> Hunter Mackenzie,<sup>2</sup><sub>June 21</sub> and Homans.<sup>99</sup><sub>Nov. 6</sub> Mygind's case was primary, was operated upon through the mouth by electrolysis, and resulted in death. The report of the case and its treatment is elaborate and scholarly, and well worthy of study.

Judging from this case, the author does not think that treatment with electrolysis is of any use in malignant, rapidly-growing tumors of the tonsils, but that, without doubt, it is a powerful therapeutic agent which acts destructively without causing irritation, suppuration, or putrefaction. It is probably more useful in benign tumors of the tonsil.

The chief interest attaching to Mackenzie's case was the close resemblance of the tumor to those presented by the subacute inflammation of a previously enlarged tonsil. Removal was contra-indicated, and patient died without operation.

Homans, in his case, removed the tumor by external excision as follows: Right tonsil involved. Incision,  $2\frac{1}{2}$  inches long, from right side of hyoid bone to mastoid process. The fasciæ were divided one after another; the parotid was pushed upward and the submaxillary gland into the tendon of the digastric muscle downward. With the point of a director the constrictor of the pharynx and the mucous membrane in front of the tonsil were torn through. Scissors were used in the mouth to divide the pillars of the palate and the mucous membrane around the tonsil. Forceps were then introduced through the wound in the neck and the loosened tonsil pulled outward, while its attachments, which were put on the stretch, were divided by scissors introduced through the mouth. The split in the pharynx, about  $2\frac{1}{2}$  inches long, was united by a continuous silk suture, and a quill drainage-tube was introduced through the external wound which was dressed with iodoform gauze. The absence of fat and of teeth in a thin but wiry subject made the operation very simple. The patient recovered. While this case might have been operated upon through the mouth, the external method gave greater room, better control of hæmorrhage, and the opportunity to reserve a healthy margin of tissue.

*Syphilis*.—In an exhaustive thesis <sup>62</sup><sub>Nov.</sub> upon syphilitic gumma of the tonsil, Natier reviews 15 cases, 5 of which have heretofore been unpublished, and presents a succinct general account of the disease.

*Tumors*.—Downie <sup>2</sup><sub>May 3</sub> reports 3 cases of primary epithelioma of the tonsil; Sheen <sup>2</sup><sub>May 17</sub> 1 case, and Labit <sup>780</sup><sub>July 1</sub> 1 case.

Papers upon hypertrophy of the lingual tonsil have been furnished by Seiss, <sup>9</sup><sub>Dec. 2, '89</sub> Clark, <sup>99</sup><sub>Feb. 6</sub> Kersting, <sup>13</sup><sub>May 15</sub> Baron, <sup>131</sup><sub>June</sub> Thrasher and Boylan, <sup>61</sup><sub>July 5</sub> and by Neidert. <sup>297</sup><sub>No. 11</sub> Seiss recommends, besides the treatment usually advocated, that mild cases be treated with appli-

cations of menthol or thymol, in solution with equal parts of alcohol and glycerin.

*Œsophageal Spasms due to Hypertrophy of the Fourth Tonsil.*  
—Joal <sup>136</sup><sub>Aug. 15</sub> thinks that in many cases œsophageal spasm is of reflex origin, and has published observations on nine patients attacked with spasmodic stricture of the œsophagus, and cured by a treatment directed to the concomitant and originating nasal affection. Diseases of the nose are not peculiar in causing a neuropathic œsophageal affection. Instances have been reported of dysphagia cured by the ablation of a palatine tonsil or by the removal of a wisdom-tooth, and the case of an ecclesiastic suffering for four years from spasmodic attacks affecting the œsophagus, and cured by the destruction, by the galvano-cautery, of the hypertrophied lingual tonsil, is cited. This case can be compared with another in which the cauterization of large granulations of the base of the tongue excited, in a lady, reflex and spasmodic attacks of the œsophagus; œsophagismus, Joal believes, can be regarded as one of the reflex neuropathies originating in the tonsil.

*Miscellaneous.*—Dauchez <sup>152</sup><sub>Dec. 7</sub> describes a peculiar affection of the tonsils which, by successively attacking different members of the same household, seems to deserve the appellation of both an infectious and a contagious disease. He has seen 22 cases in all. Chills, followed by a fever, sometimes very high, were prodromal symptoms, lasting from five to ten days. The tonsils then began to swell and to show creamy-white points, which remained visible from the first to the last of the acute attack,—apparently miliary abscesses of the follicles of the tonsils. The disease is characterized also by the absence of enlarged glands, albuminuria, or paralysis.

Gabbi <sup>376</sup><sub>Apr., '89</sub> reports a case of follicular tonsillitis in which he demonstrated the presence of the pneumococcus, and calls attention to the frequency with which pneumonia is associated with tonsillitis.

Gleitsman <sup>150</sup><sub>Dec., '89</sub> reports a case of severe peritonsillar abscess, in which, eight days after the opening of the abscess, the patient was attacked with hæmorrhage, which was only controlled by packing the abscess-cavity with a hæmostatic. Three days later the bleeding recurred, and was controlled as on the first occasion. The patient recovered.

## UVULA.

*Reflex Neuroses.*—Mantle<sup>2</sup><sub>Feb.8</sub> describes the various possible causes of laryngismus in children, and states that this disease may be due to elongation of the uvula, amputation of which will result in cure. Dieulafoy<sup>3</sup><sub>Nov.12</sub> reports a case of spasmodic contraction, or “tic convulsif,” of the soft palate in a man of 42. It was of obscure origin and had lasted two years. Legroux<sup>3</sup><sub>Nov.26</sub> also refers to a similar case, in which the spasm was lateral, and not synchronous with the pulsations of the heart.

*Tumors.*—Chipault,<sup>118</sup><sub>June</sub> in a scholarly article, entitled “Notes upon the Uvula,” and covering about 100 pages, gives a general history of the operations upon this organ, and reports cases of mucoid cyst and one of angioma.

*Cleft Palate, Perforations, and Fissures.*—Muscular tension has been considered the great difficulty in uniting the two portions of the velum palati in cases of cleft palate. To overcome this difficulty the muscles on either side have been divided by incision, or, as Billroth has proposed, they have been cut at the point of their insertion. Jules Wolff<sup>14</sup><sub>May 25</sub> states that this mutilation is unnecessary. Since October, 1889, he has operated upon 9 cases of congenital cleft palate without resorting to this procedure, and his results have been most satisfactory. The operation is not only simplified, but, by leaving the muscles of the velum palati intact, the function of this organ returns more promptly and is more nearly perfect.

Fowler<sup>6</sup><sub>Nov.30,'89</sub> calls attention to the fact that perforations through the anterior pillars of the fauces are generally not congenital nor due to syphilis, but are the result of suppurative disease of the tonsils, usually occurring in the course of scarlet fever.

Cheroni<sup>91</sup><sub>Nov.10,'89</sub> suggests that the degree to which speech may be affected in congenital fissure of the arch of the palate does not always correspond with the extent of the lesion. In this connection the dimensions of the naso-pharyngeal space appear to play the principal part. Operation without attention to the proper instruction of the patient will be unsatisfactory. Exercises in pronunciation will result in greatly improving the articulation.

Baudet<sup>188</sup><sub>Feb. 2</sub> reports an instance of progressive resorption of the palatine and alveolar arches, and refers to several similar cases.

# DISEASES OF THE LARYNX, TRACHEA, AND ŒSOPHAGUS.

BY J. SOLIS-COHEN, M.D.,

PHILADELPHIA.

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## DISEASES OF THE LARYNX.

*Suppurative Phlegmon of the Epiglottis.*—O. Chiari <sup>84</sup><sub>Nov.13</sub> reports an interesting case of suddenly-developed, suppurative inflammation of the epiglottis. Incisions into the epiglottis gave exit to fetid pus, but the symptoms increased so intensely as to require tracheotomy. The neck was so short that the trachea could not be exposed, although the internal incision extended to the sternal notch; so the thyroid gland was detached and the incision was made through the conoid ligament and the cricoid cartilage. Despite the desperate character of the case and considerable trouble with canulas, owing to the anatomical relations of the larynx and trachea, the patient made a satisfactory recovery. It was supposed that infection had been produced by injury from a fish-bone, although there was no positive evidence of traumatism; and the question is raised whether infectious phlegmon of the pharynx is not sometimes attributable to a similar cause, though there be no direct evidence of its occurrence.

*Phlegmonous Laryngitis.*—P. Merklen <sup>827</sup><sub>Nov.12</sub> reports 2 cases of infectious phlegmon of the pharynx and the larynx, both terminating fatally. In a *résumé* of the subject he intimates that but one case of recovery is on record,—an observation in which, however, he is in error,—death usually resulting within a few days, whether tracheotomy be performed or not. He insists on the differentiation of this disease from erysipelas, with which it is often confounded; and he cites dysphagia, albuminuria, splenic engorgement, and in many instances delirium, as the special characteristic indications of the malady.

*Œdema of the Larynx.*—In Virchow's laboratory 210 cases were noted in 3887 autopsies,—149 in men, 40 in women, and 21

in children. Felix Peltetsohn<sup>4</sup><sub>Nov. 4, '89</sub> tabulates the diseases in which the condition occurred,—44 in regional diseases and 166 in systemic diseases.

*Per contra*, only 8 cases of œdema of the larynx were noted in 5161 patients treated at the clinic,—7 in men, 1 in a woman; 7 were cases of inflammatory regional disease; the etiology of the other case could not be determined. Systemic disease could not be detected in any of them.

*Retrolaryngeal Abscess*.—Our corresponding editor, Gouguenheim, of Paris, refers to two observations by Jossierand, the lesions occurring with great rapidity, coincident with the onset of pneumonia, and menacing life by suffocation. Their rupture saved the patients, and in the pus expelled were found the encapsuled pneumococci of Friedlander.

*Chronic Laryngitis*.—Hoarseness in professional vocalists is often found by Sajous,<sup>61</sup><sub>May 3</sub> of Philadelphia, to be due to deficiency of lubrication of the vocal bands. This condition he has successfully combated by administration every two hours of 10 grains of ammonium chloride in a tumblerful of water, and the topical use of warm sprays of a saturated solution of potassium chloride at the same intervals. The doses are so managed that the last one should be taken at least about three hours before a performance. This avoids exposure during the subsequent stage of perspiration. A lozenge containing 10 grains (0.65 gramme) of the ammonium chloride taken between acts is of benefit in some instances.

*Syphilis of the Larynx*.—Gouguenheim, of Paris, corresponding editor, in directing our attention to a class of tertiary lesions closely resembling those of tuberculosis, states that he has had several cases in which the diagnosis could not be established except by the march of the malady, the general good health of the subject, and the coincidence of other manifestations of the diathesis. He cites a case of Peyrissac<sup>780</sup><sub>Jan., Feb.</sub> in which the lesions involved almost the totality of the larynx; also a gumma of the ventricular band, which disappeared under treatment by Colo<sup>127</sup> after three injections of mercuric peptone, each containing 1 centigramme ( $\frac{1}{8}$  grain) of sublimate. He reports an unedited case of his own in which an irregular thickening posteriorly closely resembled pachydermia.

*Tuberculosis of the Larynx*.—Korkunoff,<sup>326</sup><sub>B. 1, II. 2, '89</sub> after present-



ing a summary of the views held by different investigators upon tuberculous ulcers of the larynx and the method of infection with bacilli, gives the results of his own careful series of microscopic studies undertaken at the suggestion of von Ziemssen. These show that in the immense majority of instances the bacilli found in the larynx are carried from pulmonic foci by the blood- and lymph- vessels into previously dilated subepithelial lymph-spaces of the mucous membrane of the larynx; and that they penetrate the epithelium from without only in some of those exceptional cases in which, from other causes, some solution of continuity has occurred, affording access to the bacilli of sputa which have been expectorated from the bronchi and become lodged upon the diseased portions of the mucous membrane.

Percy Kidd,<sup>2</sup><sub>Mar. 29</sub> calls attention to a form of stenosis occurring primarily at the rima glottidis, and depending not on the amount of swelling, but on mechanical fixation of the vocal bands in the position of phonation, of which he has met 6 instances, 2 of which he reports. At the autopsy of one of these cases the crico-arytenoid joints were found healthy, but the posterior crico-arytenoid muscles were thin and pale and their fibres were interspersed with yellowish tissue. The arytenoid cartilages were found to have been fixed by a firm tuberculous growth which extended down to the perichondrium without invading the cavity of the joints.

Our corresponding editor, Massei, of Naples, states that pyocyanin (methyl violet) is said by Masini,<sup>624</sup><sub>Nov.</sub> who applies a solution of 1 gramme (15 grains) in 250 (8 ounces) of distilled water, three times a day, to be more useful in his hands than iodoform, menthol, or lactic acid. It is also highly recommended by many other observers as a topical remedy, especially in ulcerative cases. All do not use it in solution. Scheinmann<sup>84</sup><sub>No. 35</sub> applies it by means of a heated probe dipped in the finely-pulverized drug, and claims that cicatrization ensues without irritation after eight to ten applications.

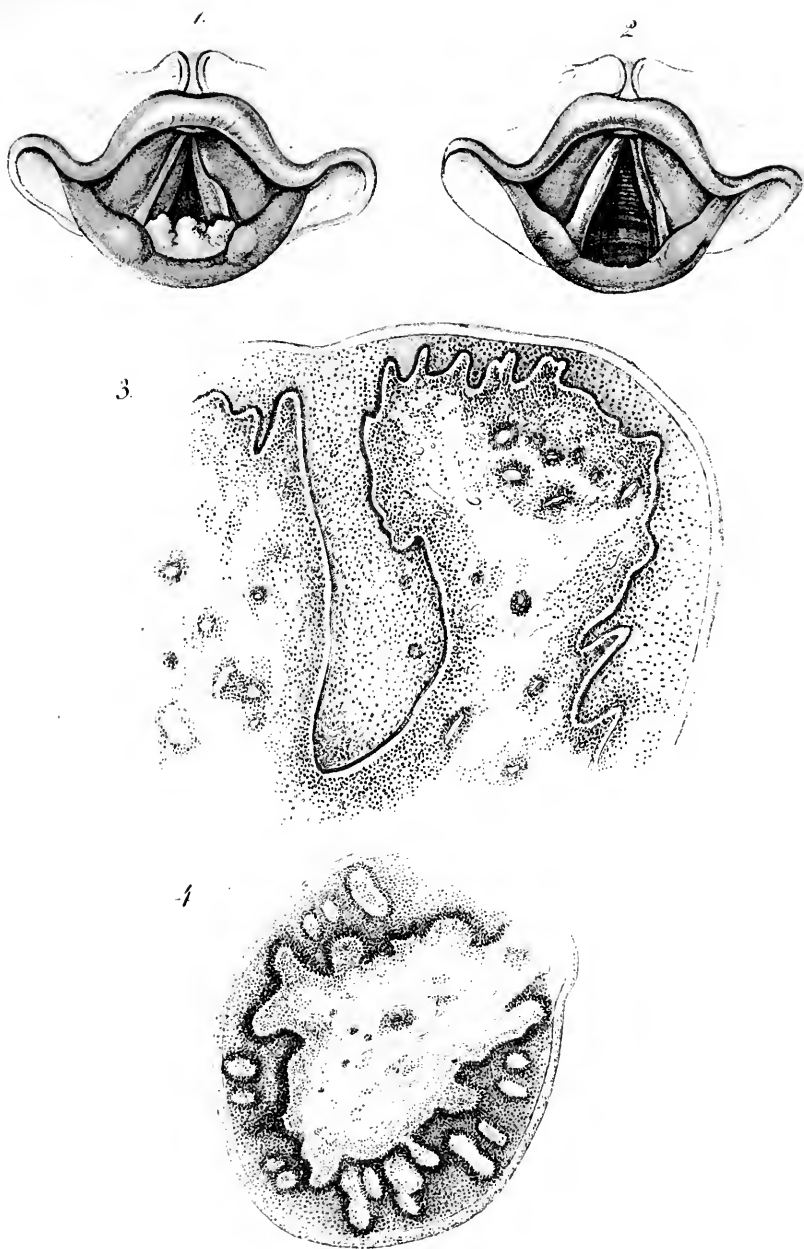
In an article on laryngotomy and dilating procedures in laryngeal stenoses, A. Bergmann, of Riga,<sup>21</sup><sub>Oct. 18</sub> warns against operative interference in tuberculosis of the larynx by laryngo-fissure, scraping, and cauterization. He had signally failed in so treating 2 selected cases. In one, the emaciation progressed despite the relief to glutition, and the disease made rapid progress in the lungs,

while recurrence soon took place in the larynx, and the patient died one month after the operation. In the other, topical recurrence took place still earlier. In both instances the operation was well borne.

Betz, of Mainz,<sup>116</sup><sub>Nov., '89</sub> discusses the indications for surgical interference in tuberculosis of the larynx, and especially with reference to laryngeotomy. He refers to the opinion expressed by E. Fränkel and by Massei that this radical procedure should be practiced in cases of primary tuberculosis; and cites an instance, reported by Hopmann in 1887, in which the patient's sufferings were wonderfully relieved to the date of death, some three months later, as a result of progress in the pulmonary lesions. He then reports a case in which he regrets he did not practice timely extirpation, as the progress of the disease and the post-mortem investigation rendered it probable that such a course would have been preferable to the tracheotomy and symptomatic treatment which had been pursued. While Betz is far from believing that such cases as the one in question are frequently observed, he asserts that the fact that they do occur does not justify absolute abstention from laryngeotomy in their treatment.

*Lupus of Larynx*.—Our corresponding editor, Massei,<sup>589</sup><sub>Nov. 23, '91</sub> calls our attention to a case of secondary lupus in which tracheotomy was necessary. The epiglottis, the thyro-arytenoid ligaments, and the interarytenoid membrane were involved, producing a constriction.

A case of primary lupus of the larynx is reported by C. Garré,<sup>31</sup><sub>Dec. 24</sub> of Tübingen, the second only, it is stated, on record in German literature. The patient was a servant-girl, 28 years of age, with a warty growth on the posterior portion of the tongue, with infiltratory extension first to the epiglottis, and then to the aryepiglottic folds and the arytenoid cartilages, and to the palate. As the extension could not be controlled, the parts were removed through the incision of subhyoid pharyngotomy, after preliminary tracheotomy and tamponing the trachea. To prevent cicatricial stenosis of the laryngeal entrance, almost its entire surface was covered with flaps of mucous membrane transplanted from the anterior part of the pharynx. On account of pain and cough in gluttony, nutrition was supplied through the rectum at first, and later through the œsophageal tube. The case terminated



Verruca dura laryngis (Bergengrün).  
Virchow's Archiv.



favorably without recurrence. An excellent review follows on the subject of lupus of the larynx and on subhyoid pharyngotomy. In another case of primary lupus of the larynx, reported by A. Langie,<sup>569</sup><sub>Nos. 9, 10, 11, 12</sub> laryngectomy was practiced under the impression that the growth was malignant. Langie mentions 6 cases of primary lupus previously reported.

*Primary Laryngoscleroma.*—S. Gross<sup>569</sup><sub>No. 33</sub> contends that some of the cases reported as *chorditis vocalis inferior hypertrophica* are instances of primary laryngoscleroma, as evidenced from their microscopical inspection, which reveals the presence of the specific bacilli known as the bacteria of the ordinary rhinoscleroma.

*Laryngeal Pachydermia.*—Since the papers published by Virchow on this lesion, quite a number of instances have been reported. Edmund Meyer, of Berlin,<sup>69</sup><sub>Oct. 16</sub> reports 11, all in males, and all involving posterior portions of the vocal bands. Severe dyspnœa existed in 7 of them, in consequence of impaired abduction of the vocal bands. All of them were benefited by potassium iodide internally, though complete resorption did not occur in any instance. Meyer doubts any association of the lesion with either syphilis or tuberculosis. O. Chiari,<sup>8</sup><sub>No. 41</sub> of Vienna, on the other hand, has seen the disease produced by both syphilis and tuberculosis, as well as by chronic catarrh, from abuse of spirituous liquors, and other causes. In cases of diffuse infiltration of the interarytenoid region, he has found the epithelial layer thickened to five or six times its normal dimensions, and he deems the anterior surface of this interarytenoid fold to be especially liable to the lesion.

Under the heading, "A Case of Hard Warts,"—*verruca dura* of the larynx,—Paul Bergengrün, of Riga,<sup>20</sup><sub>B. 98, p. 536</sub> reports in detail a very marked case of pachydermia from the practice of Adolf Bergmann, of the same place. The patient, a man 22 years of age, was received December 25, 1887, with the history of continuous hoarseness and throat difficulty since an attack of croup at 6 years of age. During the last three years the hoarseness had augmented, especially during the latter part of this period. There was no personal history of either syphilis or tuberculosis, and no history of either in his parentage. The voice was hoarse and weak, and there was slight dyspnœa, especially on any strenuous movements. The pharyngeal mucous

membrane was exquisitely dry, and was covered in spots with stringy, desiccated secretions. The larynx showed intense chronic catarrh in all its surface. The lining of the left ventricle was especially swollen, deeply injected, and covered the greater part of the left vocal band, the free portion of which became freely visible, however, during phonation. There was intense bilateral subchordal swelling. The mucous membrane over the arytenoid cartilages and the interarytenoid region was greatly reddened and swollen. From the latter arose a number of whitish, warty prominences, some of which reached the bulk of a pea. Their surface was slightly irregular. Palpation with the sound gave the impression of very dense consistence. They were sessile and readily mobile, and were, therefore, not attached to the basement tissues. The mobility of the laryngeal structures was normal. After cocaineization, two tumors larger than peas were excised with the electro-caustic snare. After their removal some similar growths were seen below the vocal bands. In the course of some thirty-four days the remaining tumors were similarly removed and their bases cauterized with the flat burner. The lining of the diseased ventricle was thoroughly cauterized twice with chromic acid, followed by washings with soda solutions, reducing the swellings to a minimum. The patient was dismissed with his larynx in a fairly good condition.

Bergengrün submitted several of the excised masses to very careful microscopic study. The sections showed exclusively the epidermoidal characteristics of those of hard or corneous warts, —a vascular connective tissue from which vascular papillary outgrowths extended, finger-like, toward the periphery, with distinct zones of small-celled infiltration in the enveloping epithelium of the neighboring portions of the generally acellular connective tissue of the neoplastic formation, and with occasional groupings of round-cells in the centre, some arranged in stripes, some in circles, some in smaller or larger spindle-shaped groups lying beside each other. The development and hardening of the epithelium were especially distinct in the smallest growth removed from below the vocal bands, where the epithelium in multiple layers formed more than half the neoplasm.

*Morbid Growths of the Larynx.*—Our corresponding editor, Gouguenheim, of Paris, calls attention to a case of sanguineous

cyst, operated upon by Charazac.<sup>780</sup> June The patient had been hoarse for ten years. The growth occupied the anterior third of the vocal band. Myxoma of the epiglottis has been reported by S. O. Vander Poel, of New York,<sup>1</sup> Sept. 6 associated with pernicious anæmia which terminated fatally. The growth, the size of a horse-chestnut, had been successfully severed with the incandescent snare, and slight recurrence had taken place a few weeks later. A globular laryngeal tumor, about 12 millimetres in diameter, removed by F. H. Hooper, of Boston,<sup>59</sup> Mar. 7 from the anterior portion of the left vocal band and ventricle of a man 53 years of age, was found, on microscopic investigation, to be a telangiectatic myxofibroma in a state

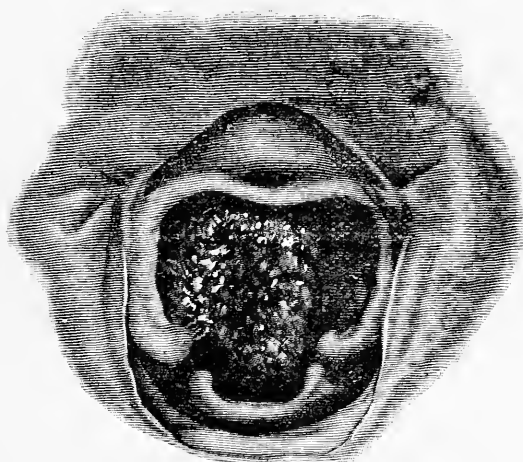


FIG. 1.—GROWTH AS DEPICTED BY DR. ELSBERG.  
(*New York Medical Journal*.)

of amyloid degeneration. One of the most important contributions to the clinical history of morbid growths of the larynx, is a report by Rufus P. Lincoln, of New York,<sup>1</sup> Feb. 22 on the evulsion of a laryngeal tumor twenty-two years after removal by laryngotomy. A lady, 23 years of age, came under the care of the late Dr. Elsberg, with a large cauliflower growth (Fig. 1) extending from the epiglottis to some distance below the vocal bands. By various intra-laryngeal procedures in 1864 there was removed in bulk as much as an ordinarily small egg, with great temporary relief. Recurrence ensued, and an external operation was performed in 1867, the larynx being split open and then freed from every vestige of the neoplasm. Recovery was prompt, and the voice became fairly

good in about three months. Nothing occurred to suggest recurrence until the summer of 1888, and in October of that year another growth was discovered. Lincoln first saw the growth in March, 1889, when it presented the appearance seen in Fig. 2, reproduced from a photograph made by French, of Brooklyn. It was about the size of a large kernel of corn, and occupied the posterior third of the right vocal band, pink in color, and resembling a papilloma. On May 24th Lincoln removed it with a Cusco's forceps, and on microscopic examination it proved to be a papilloma. The appearance of the larynx after removal of the growth is shown in Fig. 3, also from a photograph by French, in which the distorted appearance of the interior of the larynx resulting from the laryngotomy is correctly represented. Edward Boinet, of Montpellier, reports an instance of the rapid development

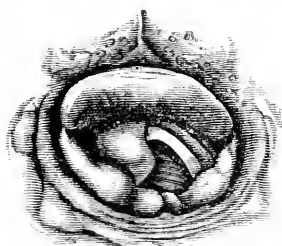


FIG. 2.—THE LARYNX WITH THE TUMOR  
IN SITU.

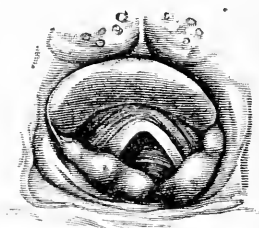


FIG. 3.—THE SAME AFTER REMOVAL OF  
THE TUMOR.

(*New York Medical Journal*.)

and the spontaneous consecutive expulsion of three large myxomatous polypi from the larynx of an agriculturist 44 years of age. Examined histologically by Kiener, they were found in an advanced stage of necrosis, and filled with three species of micro-organisms which are described in detail, a special elongated bacillus being particularly noticeable in the region of implantation and the zone immediately adjacent, and to the special action of which the detachment of the polypus was attributed.

*Carcinoma.*—Proof of the frequency of this lesion accumulates with great rapidity. An excellent presentation of its clinical history is given, with an account of a case by Max Schaeffer, <sup>69</sup> No. 28 of Berlin, in which its slow development long obscured the diagnosis.

The case is reported <sup>69</sup> No. 28 of a man 50 years of age, several of whose immediate relations had perished with carcinoma. He had suffered with psoriasis for twenty-eight years, with laryngo-tracheal

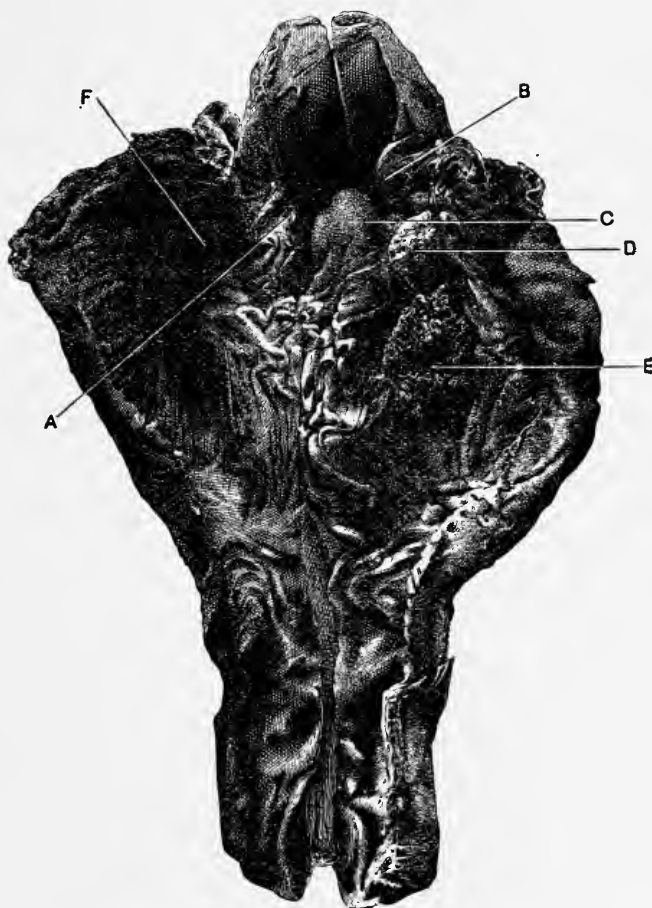


catarrh for twenty-five years, and with hoarseness and soreness in the left half of the larynx for ten years. At the end of these periods, June 3, 1885, he was still well nourished and in good general health. His larynx showed slight infiltration and paresis of the left vocal band, and infiltration of both ventricular bands and the left aryepiglottic fold. His respiration was somewhat weaker on the left side than on the right. Under topical treatment these conditions subsided almost entirely during the course of the year. In October, 1855, a corneous granulation was noted for awhile in the anterior third of the left vocal band, but it soon disappeared. February 2, 1886, only infiltration of the left ventricular band and paresis of the left abductor muscle were to be noted. November 13th the left vocal band was so much hidden as to appear only as a projection the thickness of a catgut ligature. Eight months later, July 13, 1887, the voice was completely hoarse. There was a smooth infiltration of the left ventricular band fully overcovering the vocal band. At this time the diagnosis of sarcoma was made. December 13th the infiltration was greater and covered the orifice of the ventricle as well as the vocal cord; the left aryepiglottic fold was somewhat infiltrated and looked œdematous. A month or so later, January 29, 1888, the infiltration had extended forward and had crossed the anterior commissure of the glottis to the opposite side, and the left side of the epiglottis appeared somewhat thickened and turned toward the right. The movements of the left half of the larynx were somewhat more sluggish than those of the right side. The patient complained of a sense of tension in the entire throat and of difficulty in glutition. Unilateral exsection of the larynx was now advised, but refused. In September the vocal cord had become visible and was ulcerated anteriorly and posteriorly, and a uvula-like tumor had become developed at the base of the epiglottis toward the right side. In October there was some bloody expectoration; some fœtor from the mouth; glutition of food was off and on painful, and the tumor at the anterior commissure had enlarged. The left arytenoid region seemed somewhat excoriated through the pressure of the tumor. The pus seemed to escape from an abscess-cavity beneath the left vocal cord. Pressure over the left thyroid cartilage elicited lancinating pains extending toward the ear.

On November 8th, Hahn, of Berlin, after performing a preliminary tracheotomy and occluding the trachea, split the larynx and found the region of the ventricular and vocal bands of the left side transformed into a whitish-gray tumor, composed of a smaller portion anteriorly in the median line and coalescent with a larger mass in the centre of the left side. The growth was not eroded, and appeared to be fully circumscribed. It was removed by incision into the surrounding healthy tissue  $\frac{1}{2}$  to 1 centimetre from its borders, and the lower portion of the thyroid cartilage was also excised after separation of the external soft tissues with a raspatorium. The wound of incision and the cavity of the larynx were firmly tamponed with iodoform gauze, which was secured with sutures through the integuments. The patient did well for about a year, when recurrence took place, and fifteen months after the excision the new growth presented much the appearance of the first one at the period of operation, and was rather more extensive. On June 6, 1890, a low tracheotomy became necessary; and the patient at last report was wearing a large-sized canula with comfort, with great improvement in respiration, and with improvement in speech, but glutition was very little bettered, inasmuch as the growth had extended into the left glosso-epiglottic fold. The chief point of interest in this case is the slow development of the carcinoma, which for a long time obscured the diagnosis.

*Alveolar Sarcoma.*—A case of alveolar sarcoma of the pyriform sinus has been recorded by Felix Cohn, of New York.<sup>150</sup><sub>Mar.</sub> A wood-sawyer, 47 years of age, had acquired syphilis at 21, but had otherwise been in good health until a few weeks before he came under observation, December 19, 1889, when he took cold, and has suffered from slight throat ailment ever since. His neck had become somewhat thicker during the last few weeks. A tumor the size of a fist extended along the right side of the neck from some little distance below the lower jaw, outward to the outer border of the sterno-cleido-mastoid muscle, and downward to the middle portion of the neck. It was rather firm in consistence, uneven on the surface, and unattached to the skin. The voice had a peculiar clang, as though something stuck in the throat. Laryngoscopic inspection revealed marked œdematous tumefaction of the right aryepiglottic fold, the mucous covering of the right Wrisberg, Santorini, and

arytenoid cartilages, which covered the vocal bands and even a portion of the left ventricular band in the form of a pale-red tumor. Somewhat below, a furrow separating the swollen aryepiglottic fold from the other structures named, was a small ulcerated point on the posterior wall of the larynx, and which



ALVEOLAR SARCOMA OF PYRIFORM SINUS.

A, left Santorini cart. B, right aryepiglottic ligament. C, œdematous envelopment of Wrisberg, Santorini, and arytenoid cart. D, E, tumor in right pyriform sinus. F, left normal pyriform sinus.

comprised a portion of a small cauliflower growth. Fragments of this growth, removed with forceps, were submitted to microscopic examination, and proved to belong to an alveolar sarcoma. The growth had developed primarily in the pyriform sinus, the external portion being regarded as the result of regional metastasis.

The patient's dyspnœa increased to such an extent as to

threaten suffocation, and an attempt was made by W. Meyer to remove the tumor by external access. Precautionary tracheotomy was first performed. The growth was found adherent to the sterno-mastoid muscle in great extent. The internal jugular vein was obliterated. The vagus, phrenic, and the sheath of the carotid were agglutinated to the tumor. The external tumor was removed, and with it a second smaller one the size of a nut, which lay upon the base of the skull, but unconnected with the larger one. As soon as the pneumogastric and phrenic nerves were divided in the dissection, respiration became irregular and difficult and the pulse weaker and more frequent. The operation was, therefore, completed as rapidly as possible, and the patient died six hours later.

The specimen on page 11 shows a mulberry-sized tumor filling the entire pyriform sinus and extending from the pharyngo-epiglottic ligament to near the upper border of the cricoid cartilage.

*Foreign Bodies in the Larynx and Trachea.*—William Macewen<sup>213</sup><sub>Dec.</sub> reports a case in which a nutshell, lodged in the trachea for thirteen days, was removed by tracheotomy during impending suffocation. It was found buried in the posterior wall of the trachea just under the cricoid cartilage, lying obliquely, and covered, to a great extent, with granulative tissue, one thin layer of which was spread over the surface of the nutshell. When removed with forceps its concave surface was found to contain a mass of granulation tissue surrounding a portion of the kernel.

An interesting case from the practice of Sonnenburg is reported by Hermes.<sup>41</sup><sub>June 23</sub> A girl, 17 years of age, had swallowed a needle the September previous, and had since suffered with intense gastric pains, compelling her to keep the body bent forward. The parts were cut down upon, and a projecting point was found in the posterior edge of the transverse fascia. The peritoneum was incised at this point, and the needle was found in a mass of connective tissue in which it had become engaged after having perforated the stomach.

Schoyler,<sup>11</sup><sub>Aug.</sub> of Berlin, extracted from the trachea of a girl of 19 a needle attached to a feather. It had been aspirated and could not be removed by traction on the feather. Laryngoscopic examination showed that it was fixed with one end in the bifurcation of the trachea and with the other on a tracheal ring. The

needle was liberated by the aid of a probe introduced between it and the trachea.

A case of sudden death from escape of milk into the air-passages is reported by Emile Müller.<sup>168</sup> A child, 5 months of age, had no other indisposition than slightly difficult respiration when lying on its back. One morning, after having been nursed and laid down, it made a grimace as though sick at the stomach, became blue, and died in a few moments. At the autopsy the thymus gland was found larger than is usual, and the larynx, trachea, right bronchus, and all its divisions were found filled with milk. The size of the thymus explained the difficulty of respiration alluded to.

Lennox Browne<sup>22</sup> reports an instance of supposed laryngeal cancer or phthisis in a lady 35 years of age, from whose larynx he had removed an impacted plate of artificial teeth, which, from the history, had been aspirated into the larynx twenty-three months previously, probably during an epileptic seizure. Six weeks after its removal the patient had regained twenty-three pounds of her lost weight. It is remarkable that laryngoscopic inspections had been made by four gentlemen, who had failed to detect the presence of a foreign body.

*Luxation of the Crico-Thyroid Articulation.*—H. Braun,<sup>4</sup> of Königsberg, calls attention to this undescribed lesion to which he is subject, and which he has seen in two of his patients. The luxation of the inferior horn of the thyroid cartilage forward from its articulation with the cricoid cartilage occurs during deep inspiration, and more frequently during yawning, especially when it is combated, or incomplete as when the subject is in the recumbent position. It occurs unilaterally, sometimes in one side, sometimes in the other, often frequently, even daily, and then may not recur for weeks or months. It is attended with intense pain, and even anxiety, and this although the patient is assured that the lesion is of slight importance. A slight prominence is produced at the seat of pain on the inner side of the sterno-cleido-mastoid muscle, deeply situated at the level of the lower border of the thyroid cartilage. It can be readily reduced by pressure outward and backward, receding with a distinct noise. It can likewise be reduced by a few efforts of deglutition. The luxation is attributed chiefly to contractions of the sterno-thyroid and crico-thyroid

muscles, the movements of the larynx being restrained by its attachment to the hyoid bone. A loose capsule is regarded as the predisposing feature of the lesion.

*Fractures of the Larynx.*—At the time the article on this subject for the “International Encyclopædia of Surgery” was prepared, but 2 cases of recovery after fracture of the cricoid cartilage appeared to be on record,—the cases of Treulich and of Masucci. A third instance has occurred under the observation of Alfred Sokolowski, <sup>4</sup><sub>Oct. 6</sub> of Warsaw, which is reported with many interesting details, especially in reference to its laryngoscopic phases. It is, we believe, only the third case of recovery on record after fracture of the cricoid cartilage. One, a country girl 20 years of age, wearing an apron over her shoulder and tied in a knot around her throat, after the fashion of the country, got the apron caught in the driving-wheel of a hay-cutter. Pain in the laryngeal region and dyspnœa were immediate, and were soon followed by severe cough, which continued for several hours and was attended with expectoration in which was a good deal of blood. On the following day Sokolowski and his colleague, Bukowski, found her with cyanotic and œdematous visage, severe dyspnœa, with respiration interrupted by severe stridulous cough, hoarse voice, and speaking with difficulty in a barely recognizable whisper. Considerable purulent sputa was expectorated with the cough. The entire neck was greatly swollen, and subcutaneous crepitation felt in every portion on palpation. A deep, vertical depression was felt in the left thyroid cartilage, pressure upon which produced pain and decided sensations of crepitus. Laryngoscopic inspection revealed a moderately swollen and congested epiglottis, beneath which two thick, reddened projections were seen, corresponding to the upper borders of the thyroid cartilage and occluding the interior of the larynx. Tracheotomy was at once performed by Bukowski. A perforation into the interior of the larynx was found occupying the lower angle of the thyroid cartilage, and due to comminuted fracture of the thyroid cartilage and of the anterior portion of the cricoid cartilage. This opening needed but slight enlargement downward to permit a large canula to be readily inserted through it. Two small fragments of cartilage became detached during the operation. Recovery ensued regularly, but the patient has been unable to dispense with

the canula. It was found, on performing laryngo-fissure to determine the cause of stricture, that the entire cricoid cartilage had disappeared, and that what appeared in the laryngoscopic image to be the posterior wall of the larynx was in reality the anterior wall of the lower portion of the pharynx.

C. M. Desvernine-Galdos, of Havana, <sup>37</sup><sub>Oct.</sub> reports a case of laryngo-tracheal fracture survived for several years, in which the vocal bands became united almost their entire length, only a space of 2 centimetres being preserved anteriorly, and in which the ventricular bands vicariously acquired the function of phonatory bands. The accident was produced by a fall from a trapeze upon a stove, an angle of which was struck directly and successively by the chin and larynx. Some bloody sputa was immediately expectorated, but dyspnœa did not take place for a number of days. There was no emphysema and no dysphagia. The larynx was flattened and deviated to the left side. Pressure over the thyroid cartilage provoked pain on the right side. Laryngoscopy revealed hyperæmia of the epiglottis, aryteno-epiglottic folds, and the entire superior portion of the larynx, with infiltration more marked on the right side, and infiltration of the vocal bands and the arytenoid region. Tracheotomy was performed. The deep fascia had barely been incised when air escaped, denoting the existence of a fracture. The trachea was found flattened, with lateral fracture of three or four of the upper rings. The moment the canula was introduced sudden emphysema of the neck and face ensued, which gradually extended to the arms and trunk, in consequence of the frequent expulsion of the canula, which was too short. A special canula was introduced the day following, and the emphysema disappeared completely by the eighth day.

Desvernine saw the patient for the first time late in 1887, when he was suffering with advanced pulmonary tuberculosis. The canula had been dispensed with for three or four years, and he breathed through a permanent infundibular fistule, barely 5 millimetres in its exterior diameter. He spoke with effort, in a bass monotone, extremely limited in its modulations. The entire perilaryngeal and laryngeal regions were normal, except that the vocal bands were completely in adhesion save for a minute orifice at their thyroïdal extremities. The free borders of the ven-

tricular bands formed an ellipse, the borders of which became approximated in phonation by a movement of elevation upon an accentuated convex plane. This phonatory function of the vocal bands had been observed at intervals during the long period of seventeen years. Operative interference to separate the vocal bands was declined. The patient died in 1888.

The autopsy disclosed that there had been a fracture of the thyroid and cricoid cartilages, and of the upper four rings of the trachea, the solution of continuity of the cartilages having been complete. This explained the inability of retaining the short canula at the tracheotomy, the incision of which, parallel to the line of fracture, partially liberated a band of elastic tracheal tissue 3 millimetres in length, which acted as a lever to drive the canula outward.

The ventricular bands had undergone development to double their ordinary thickness; their muscular fibres, as well as those of the aryepiglottic folds, being the seat of a most accentuated hypernutrition. The crico-arytenoid articulations were solidly ankylosed. The muscular fibres concerned in abduction and adduction of the vocal bands, as well as those concerned in their transverse and longitudinal tension, were in an evident state of atrophic regression, without presenting any characteristics of neurogenetic atrophy.

Ubert Clarac<sup>100</sup><sub>Sept. 25</sub> reports an instance in a man, due to sudden contact against an iron plate which was projecting from a wagon, and which knocked him over backward. Although the symptoms were marked and cutaneous emphysema extensive, tracheotomy was not performed. Sudden dyspnoea and cyanosis occurred on the fourth day, and although tracheotomy was then performed the patient expired as the trachea was opened. The cricoid cartilage was found to have suffered a double fracture 1 centimetre to each side of the middle line, and there was nearly complete rupture of the crico-tracheal membrane. The fracture to the right was complete, the fragments separated, and the mucous membrane torn. The fracture to the left was in the form of a Y, the lower portion of which was vertical and inferior, and the fragments were in contact. The vocal bands and the ventricles were ecchymosed. The aryepiglottic folds were the seat of considerable emphysema. Emphysema was extensive in the connective tissue of the medias-



tinum, the whole cellular tissue protruding, hernia-like, when the thoracic covering was removed. The emphysema had invaded the entire trunk and the upper part of the hips. Both lungs were engorged. A little blood was in the trachea.

It need hardly be said that the issue in this case exemplifies the importance of immediate tracheotomy in all cases of fracture of the larynx, even if performed only as a prophylactic measure; although it must be admitted that severe injury to the cricoid cartilage is fatal in the great majority of instances, despite the most judicious management.

E. Jeauinaire<sup>213</sup><sub>Jan.</sub> reports a case of multiple fracture of the larynx and of the hyoid bone in an artilleryman. While engaged in helping to move an engine formed of two beams connected by a transverse bar of iron he slipped and tumbled backward, the bar of iron striking the anterior portion of his neck violently. He expectorated considerable blood, was unable to swallow, and was aphonic. Palpation increased a violent pain felt in the swollen neck, chiefly over the hyoid bone and the thyroid cartilage. At each inspiration a slight depression was noted over the region of the greater horn of the left wing of the thyroid cartilage. There was no emphysema and there was no crepitation. Death ensued on the seventh day. The hyoid bone was found to have sustained an incomplete fracture, or fissure, 6 millimetres in length, directed vertically from the upper border of the bone to the point of union of the right horn with the body of the bone. The large horn of the right wing of the thyroid cartilage was completely fractured some millimetres above its union with the lateral face of the cartilage. A vertical fracture in the middle line separated the cartilage into two portions for its entire length, the edges being turned outward, especially on the left side. There were two symmetric perpendicular fractures of the cricoid a little within the facets, where the cricoid cartilage is articulated with the smaller horn of the thyroid cartilage; that on the right side being a centimetre in length and that on the left being a little less extensive.

*Wounds of the Larynx.*—A gunshot wound of the larynx is reported by G. Fabiani.<sup>461</sup><sub>July</sub> A ball from a revolver penetrated the right wing of the thyroid cartilage. Tracheotomy became necessary on the following day. Death by septicæmia ensued a few days later. The ball was found to have passed through the left

ventricular and vocal bands, and to have fractured the base of the left arytenoid cartilage.

Our corresponding editor, Massei, of Naples, calls attention to the recommendation of Levi<sup>497</sup><sub>Jan.3</sub> to suture the cartilages when the wounds are not multiple nor the cartilages broken. He claims that the procedure does not favor hæmorrhage and consecutive emphysema, as complained of. Metallic sutures are preferred. F. Semeleder, of the City of Mexico,<sup>59</sup><sub>Aug.4</sub> reports a case in a woman stabbed with a stiletto, which entered the left side of the neck, about  $\frac{3}{4}$  inch from the median line, between the hyoid bone and the thyroid cartilage. The wound was 1 inch in length and had all the characteristics of an incised wound, but there was hardly any hæmorrhage. The patient had an easy and speedy recovery, but she became and remained hoarse. Laryngoscopic inspection revealed an inflamed condition of the pharynx and upper part of the larynx, and a cicatrized wound dividing the left vocal band transversely between its median and posterior thirds, near the insertion of the vocal process. This causes insufficient tension and imperfect occlusion, and is a perpetual cause of irremediable hoarseness.

#### LARYNGECTOMY.

While extirpation of the larynx continues to be practiced as a legitimate procedure in desperate cases, it is evident that more and more care is being exercised in the selection of cases, and that a more conservative stand is being maintained even by the most enthusiastic supporters of the operation. Then Eugene Hahn, of Berlin,<sup>4</sup><sub>July 28</sub> in exhibiting a specimen from a patient who died in 1889 from regional recurrence of the carcinoma some nine years after the operation, took occasion to express the opinion that it is better to avoid the operation when the carcinoma has become so extensive as to require extirpation of the entire larynx; favorable results ensuing only in such cases in which the operation can be performed early in the disease.

J. D. Juan Cisnerosy Sevillano,<sup>142</sup><sub>Oct.1</sub> of Madrid, performed complete laryngectomy for a lobulated epithelioma in the larynx of a man 46 years of age. The operation was begun February 11, 1889, but on account of chloroformic syncope could not be completed, although an hour and a half had been consumed. The following day it was completed after forty-five minutes of laborious

dissection. Recovery was prompt, and the patient was discharged on March 8th; but recurrence had already taken place, and vegetations, which bled easily, were observed in the track of the fistula. Although an artificial larynx had not been inserted, the patient became able to speak in a dull, bass voice, intelligible even at a considerable distance, and on July 1st the general condition was good, although the tumor had slowly progressed.

D. Wallace<sup>36</sup><sub>Oct.</sub> reports 2 interesting cases from the practice of Chiene: 1. A female aged 32, with epithelioma of the upper portion of the œsophagus, had been subjected to œsophagostomy. Some two months later dyspnœa had become so great as to require surgical interference. Low tracheotomy was performed, followed by incisions intended to remove the tumor by dissection from the larynx without laryngectomy; but the posterior wall and the left side of the larynx were found infiltrated, and the whole larynx was exsected along with the upper portion of the œsophagus. Death ensued on the twelfth day. The tumor was a squamous epithelioma. 2. A man aged 44 had been subjected to several endolaryngeal procedures for extirpation of an epithelioma, and subsequently to tracheotomy. A short time later, the larynx was split and the tumor recognized as extending across the larynx from the right wing of the thyroid cartilage, which was its chief point of origin, and involving both local bands. The right wing of the cartilage was removed with scissors, and the other portions of the tumor piecemeal, necessitating the removal of nearly the whole of the left wing of the cartilage. Six months later the patient was in excellent health, and able to speak intelligibly without an artificial appliance.

A very instructive case of complete laryngectomy for epithelial cancer of the larynx has been described by Ch. Périer.<sup>37</sup><sub>June</sub> It was performed without preliminary tracheotomy. The illustrations, which we reproduce for the purpose, will be of great assistance to surgeons who may have occasion to perform this operation, which strikes us as admirably conceived and executed. Unfortunately, the patient succumbed by syncope eighteen hours after the operation. The operative procedure was as follows: A transverse incision was made about one finger's breadth below the inferior border of the cricoid cartilage, through the skin and connective tissue, from one sterno-mastoid muscle to the other. A

second incision of the same extent was made just below the hyoid bone down to the thyro-hyoid membrane, dividing transversely the overlying subhyoid muscles. A third incision was made vertically in the middle line from one to the other of the first two incisions, and was extended down to the thyroid and cricoid cartilages and the trachea. The isthmus of the thyroid gland was divided between two pincettes. Dissection was then made on the two sides in succession, keeping as closely as possible to the sur-

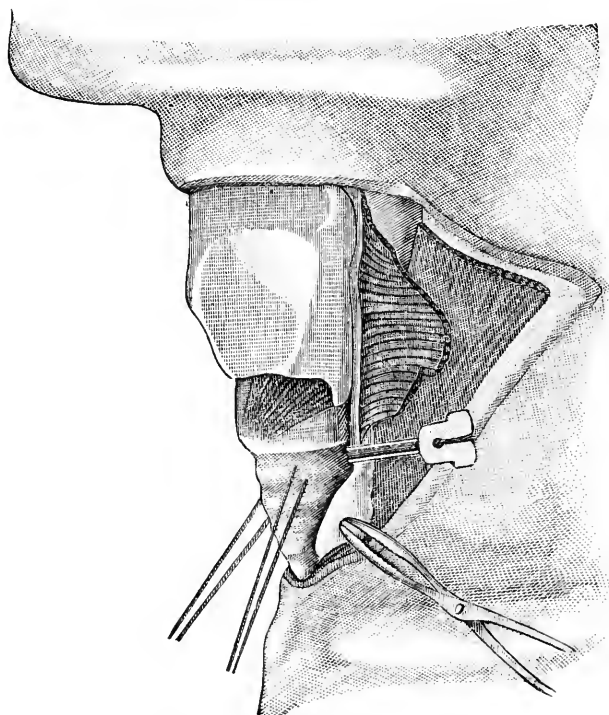


FIG. 1.—LARYNGECTOMY FOR CANCER.  
(*Annales des Maladies de l'Oreille, etc.*)

face of the aërial tube, as far as the posterior borders of the wings of the thyroid cartilage and to the furrow of separation, right and left, of the trachea and the œsophagus. Thus two lateral flaps were raised, comprising the skin and the soft parts, without occasion to secure more than five or six vessels, the largest being the superior laryngeal arteries. The laryngo-tracheal skeleton remained attached only to the œsophagus at the level of the trachea, and to the mucous membrane of the anterior wall of the pharynx at the level of the larynx, the superior constrictor muscles of the

pharynx having been detached from their thyroidal and cricoidal insertions. The patient respired well, and the precaution was taken to relax the tension of the neck now and then. The provisory hæmostasis was sufficient to present security against escape of blood into the trachea on dividing it. An attempt to pass a needle between the trachea and the œsophagus, so as to isolate the trachea as one isolates an artery before ligaturing it, failed in this instance, though so easily practiced on the cadaver.

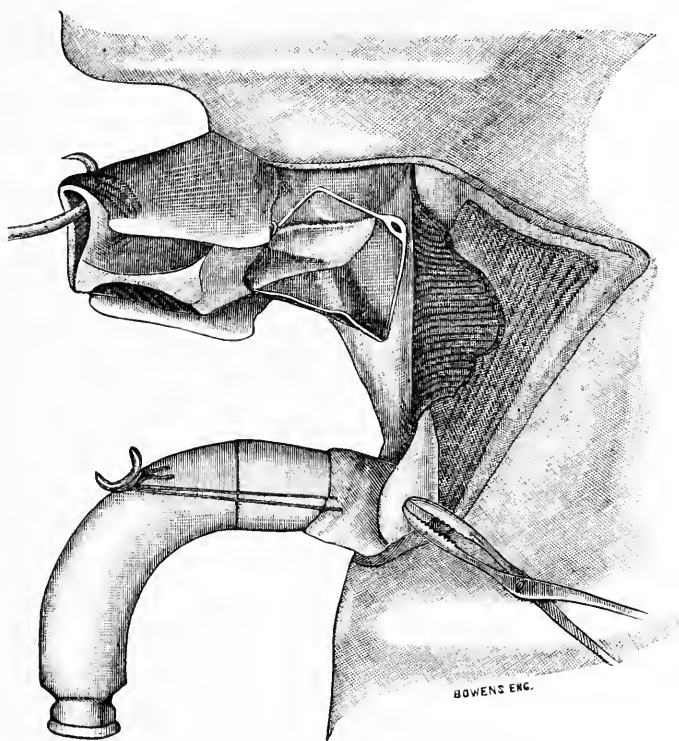


FIG. 2.—LARYNGECTOMY FOR CANCER.

(*Annales des Maladies de l'Oreille, etc.*)

By means of a curved needle a strong silk thread was passed through a portion of the thickness of the tracheal wall on each side. (Fig. 1.) An assistant held a loop of the thread in each hand, ready to draw the trachea forward the moment it should be severed from the larynx. This severance was done by a transverse incision. An assistant raised the larynx with a tenaculum, and the section was made clear to the anterior wall of the œsophagus in a single act. A conical canula was immediately introduced into the

trachea, occluding it completely. The canula carried upon its convexity a small cleat, around which were wound the threads previously passed into the trachea. (Fig. 2.) The occlusion was thus hermetically maintained. Canula and trachea being solidarized, the anæsthesia was readily maintained through the canula by means of a rubber tube of large calibre in communication with a glass funnel. The larynx, kept elevated with the tenaculum, was readily separated from the anterior wall of the pharynx (Fig. 2)



FIG. 3.—LARYNGECTOMY FOR CANCER.  
(*Annales des Maladies de l'Oreille, etc.*)

without embarrassment from important vessels, because the dissection was to the inside of the inferior constrictor, whose cricoidal and thyroïdal insertions had already been detached. The thyroid vessels remained out of sight, and it was only necessary to detach the pharyngeal mucous membrane from the posterior surface of the larynx, to which it remained attached only by loose connective tissue. The epiglottis, being healthy, was left in place after section of the thyro-hyoid membrane. The greater horns of the thyroid cartilage were cut with scissors, and the separation of the larynx became completed on cutting the mucous

membrane at the level of the aryteno-epiglottic folds. The pharynx communicated with the wound only by the contour of the superior orifice of the larynx, while below the trachea remained intact with but a single opening, its superior extremity at this moment surmounted by the canula. After definitive hæmostasis had been secured by means of some catgut ligatures, the canula was removed and the trachea was sutured directly to the skin. The anterior demi-circumference was united with the

inferior lip of the transverse incision made at this level at the commencement of the operation, and the posterior demi-circumference was sutured to the superior lip of the same incision. The opening of the pharynx was sutured in halves in the same manner to the lips of the superior transverse incision. Finally, the lips of the median vertical incision were sutured directly one to the other; the same course being pursued at the extremities of the transverse incisions to right and left of the orifices of the trachea and pharynx. (Fig. 3.) An œsophageal sound was introduced into the pharyngeal orifice. The orifice of the trachea was let alone without a canula and simply covered with a piece of salolized gauze. Chloral dressing was applied.

*Double Innervation of the Laryngeal Muscles.*—It is well known that Exner has demonstrated that in animals the superior nerve participates in the innervation of those muscles of the larynx hitherto believed to be innervated by the inferior laryngeal only. It has even been supposed that spastic constriction of the glottis in certain instances of organic paralysis of the inferior laryngeal nerve might be explained on the theory that the superior laryngeal subserves the same functions in man that Exner claims for it in animals, and that its unimpeded influence when the recurrent is paralyzed produces the constriction, inasmuch as its distribution in animals predominates in the constrictor muscles. Two cases are reported by Neuman, of Budapest,<sup>4</sup> as negating the idea that this double innervation exists in the human subject:—

I. A man 35 years of age had complete bilateral paralysis of both recurrent nerves. His vocal bands were in the cadaveric position, with incurvation of the edges anterior to the projecting posterior vocal processes. Secondary carcinomatous neoplasms, evident externally, compressed each recurrent nerve. When the patient succumbed from exhaustion to his carcinomatous disease the larynx was subjected to the most rigid examination. Both recurrenents were imbedded in masses of degenerated carcinomatous glands, where they were so thoroughly disorganized as to leave no traces, while they represented but an atrophied strand of connective tissue thence onward to the larynx. The superior laryngeals were fully intact; and hence the inference that, in this individual at least, they could not have innervated the muscles in question. The muscles innervated by the inferior laryngeal

were atrophied, especially the posterior crico-arytenoids, which were practically completely atrophied. The lateral crico-arytenoids were less atrophied, and the transverse and thyro-arytenoids least of all,—confirmative of the theories of Semon and of Rosenbach that the abductor fibres degenerate earlier than the adductors. The crico-thyroid muscle, on the other hand, innervated by the superior laryngeal, was practically intact. Hence the inference that its action in stretching the vocal bands must be preceded by fixation of the arytenoid cartilage under innervation from the recurrent.

II. This was a case of attempted suicide in which the hyothyroid membrane on the right side and the trunk of the upper laryngeal nerve had been severed. Examined after closure of the wound, the pharyngeal and laryngeal mucous membrane was found in a condition of catarrhal inflammation, the epiglottis especially being deeply injected. There was right-sided paralysis of the soft palate. The interior of the larynx was filled with saliva. The epiglottis maintained its usual position in phonation. The right vocal band was not distended as much as the left in phonation, appeared somewhat smaller, and maintained a slightly higher level. The patient was hoarse; not from the catarrhal condition, but from the relaxed activity of the affected vocal band. This case shows that the superior laryngeal nerve simply stretches the vocal bands in virtue of its supply of motor filaments to the crico-thyroid muscle.

*Paralysis of the Larynx.*—Our corresponding editor, Massei, <sup>624</sup><sub>Jan.</sub> has extended the lamented Dr. Elsberg's diagrammatic representation of paralytic conditions in conformance with the advanced opinions on their neuropathology. These include bilateral and unilateral paralysis of the lateral crico-arytenoids, unilateral and bilateral paralysis of all the muscles, spastic contracture of the left vocal band, and spasm of the adductors. The semeiotic value of the functional disturbances is fully discussed in the paper. A case of acute paralytic aphonia, due to lead poisoning, is reported by Robert Ormsby, <sup>1</sup><sub>Nov. 15</sub> of New York, in a young woman addicted to the practice of rubbing snuff into her gums. Evidences of lead poisoning in the gums led to a chemical analysis of the snuff, which was found strongly adulterated with lead. The case was rapidly cured by the administration of potassium iodide in increasing



doses. The cure had been permanent at the time of the report, one year after treatment. F. H. Bosworth, of New York, reports <sup>1</sup><sub>Oct.11</sub> a case of unilateral paralysis of the abductor muscles of the right side of the larynx, the result of an attack of bulbar disease with unusual symptoms, and which was apparently caused by suppurative disease of the antrum. The explanation offered is that there was thrombosis of one of the small arteries of the medulla, and that this thrombosis led to some meningeal disturbance extending to the cerebellum, producing loss of co-ordination in walking, partial paralysis of motion on the right side of the body from the crown of the head to the sole of the foot, with loss of appreciation of heat and cold in the left side, while the tactile sense was preserved.

E. F. Ingals, of Chicago, <sup>1</sup><sub>Sept.27</sub> reports 2 cases of unilateral paralysis of the lateral crico-arytenoid muscle, one following extraction of some teeth, and the other following extirpation of an enlarged Luschka tonsil. It is stated that both cases appeared to be of hysterical character, although one would seem to prove that an injury to the terminal extremities of one branch of the eighth pair of nerves may, through reflex influence, produce paralysis of distant muscles supplied by an entirely different branch of the same nerve; and the other would appear to indicate that in the same way paralysis may be produced in one of the distant muscles supplied by the pneumogastric branch of the eighth pair, while the injury causing it occurred to the terminal loops of one of the branches of the fifth pair. A case under the care of Lennox Browne <sup>22</sup><sub>Dec.17</sub> is reported and illustrated, in which the right vocal band is immovably fixed almost in the middle line, and is but very slightly curved. The patient, a man of 42 years of age, had had an attack of right-sided hemiplegia twenty months before he was seen by Browne, and his vocal disability began at the same time. The history of the case, in Browne's opinion, indicates a central origin to the primary lesion.

In an article on contraction of the aorta as a cause of cardiac disease, A. Schabert <sup>61</sup><sub>Dec.29</sub> refers to an instance reported by Riegel, in which, among other manifestations of a supposed aneurism of the aorta, there was noted the not unusual paralysis of the left recurrent nerve, the vocal band corresponding being in cadaveric position. At the autopsy, the aorta was found greatly contracted,

while the right auricle was much dilated and the pulmonary artery was enlarged and had exerted the pressure upon the recurrent nerve.

An instance of bilateral paralysis of the recurrent laryngeal nerves in a tuberculous subject, attributed, in the absence of all indications of aortic aneurism, to compression by tuberculous mediastinal glands while the paralysis remained unilateral, and to a tumor in the posterior mediastinum when it became bilateral, and proving, on the autopsy, to have been due to aneurism of the aorta after all, has been reported by Eugen Fränkel,<sup>69</sup> of Hamburg, Oct. 16. The aneurism, which was located between the left carotid and subclavian arteries, extended as far as the isthmus of the thyroid gland, which had undergone atrophy to a thin remnant by the pressure. The left recurrent nerve was firmly united to the aneurismal sac, and was transformed about 2 inches above its point of recurrence into a thin, wholly atrophied thread. So, likewise, with the right recurrent and pneumogastric nerves. A firm thrombus was discovered in the innominate vein at the junction of the jugular vein.

Similar instances of aortic aneurism, without the ordinary physical signs of aneurism, are not uncommon. Paralysis of the recurrent laryngeal nerves, in the absence of positive indications of different origin, are usually presumptively due to pressure from an aneurism.

Dreyfuss,<sup>4</sup> Sept. 29, in opposition to Krause, according to whom posticus paralysis in the median line, unilateral or bilateral, is produced by degeneration of the superior laryngeal nerve, which excites a reflex contraction of the muscles of the vocal bands with preponderance in adduction, grounds his diagnosis on the following five conditions: 1. In the presence of other cerebral-nerve paralysis it appears correct to assume a condition of irritation for the vago-accessory nucleus. 2. The frequently observed acceleration of the pulse in tabetic paralysis of the vocal bands indicates vagus paralysis. 3. Tabes, with median position of the vocal band indicate paralysis of the entire accessory nerve. This was first observed by Landgraf; later, after establishment of sterno-mastoid paralysis by Martius. 4. When, as in the last case, the vocal band remains for ten years in the median position, showing a continuous reflex contracture, it is difficult to decide for or against

Krause's theory, for the laryngoscopic picture is the same in accordance with this theory as when, as the author believes, secondary adductor contracture has followed primary abductor paralysis. 5. The autopsic discovery of atrophy limited to the posticus muscles, with slightly impaired or intact musculature of the other laryngeal muscles, is narrated.

The prognosis is very unfavorable in tabetic paralysis of the vocal bands; better, on the contrary, in outspoken syphilitic disease. The paralysis of the vocal bands is a frequent initial symptom of tabes, and often precedes other evidences by many years.

In an examination of 22 tabetic patients the essayist examined in Mendel's polyclinic, motor disturbances of the vocal bands could be found only in 2,—contrary to the observations of Fano and Krause. In both these patients it was possible to follow the picture into the development of bilateral posticus paralysis.

There were three further laryngeal conditions in tabes, which were likewise posticus paralyses in advanced stage, with already established secondary contracture of the adductors. The true ataxia of the vocal bands, according to Krause, is held to be unnecessary, as only one muscle-group comes into consideration in disturbances of co-ordination. In the inspiratory abduction of the vocal bands, however, only the posterior crico-arytenoid muscle comes in function. The phonatory disturbances of co-ordination observed in tabes dorsalis produce no continuous symptom, a true ataxy, but belong to the category of spastic aphonia.

*Wound of the Recurrent Nerve.*—Rutten<sup>329</sup><sub>June 5</sub> reports an instance of incised wound of the neck followed by escape of air, showing that the larynx had been penetrated. The voice acquired a special timbre, deglutition became defective, and the right vocal band assumed the cadaveric position. Sensibility was conserved. The epiglottis was depressed. All these conditions occurred immediately after the accident. Hæmorrhages occurred for a month, then ceased for two months, and then recurred, and had persisted to the date of this report. The origin of the hæmorrhage is not clear, but the other manifestations indicate that the recurrent nerve had been injured by the instrument.

*Operations on the Superior Laryngeal Nerve in Spasmodic Diseases of the Larynx.*—J. P. Creveling,<sup>61</sup><sub>Oct. 11</sub> of Auburn, N. Y.,

reports 2 interesting cases: I. A female 30 years of age had difficult breathing, attributed to the presence of a tumor situated in the base of the posterior triangle of the right side of the neck. On extirpation of the tumor it gave no relief to the dyspnoea, nor to a concomitant engorgement and tumefaction of the laryngeal mucous membrane. Six months later the patient returned with a growth in the posterior part of the upper triangle of the same side of the neck, and with another in the upper half of the anterior triangle of the left side, extending from the angle of the inferior maxilla down along the side of the thyroid cartilage. In extirpating the latter it became necessary to divide the superior laryngeal nerve. After recovery from the anaesthesia the patient was extremely hoarse and gluttony was somewhat embarrassed, but the difficulty of breathing had been overcome. The relief to the dyspnoea was permanent, but the hoarseness was a long while in subsiding, and the former strength of voice was never regained. Some eight months after the operation the phonatory movements of the left side were less vigorous than those of the right side. II. A female 17 years of age had been subject for some months to very sudden and frequent paroxysms of perverted phonation, varying from a high pitch to a low, guttural sound, and inability to pronounce some of the syllables. These paroxysms were accompanied by jerking of the muscles of the neck and motion of the head. Dissection was made down to the superior laryngeal nerve, which was stretched, and the wound was then closed. On recovery from anaesthesia this patient was as hoarse as the first one, but the spasm had entirely disappeared. The hoarseness gradually subsided entirely, and, as far as known, there had been no return of the disease.

#### DISEASES OF THE TRACHEA.

*Anomaly of the Trachea.*—H. Chiari<sup>88</sup><sub>Feb. 25, '91</sub> describes a new form of triple division of the trachea. A male infant, 16 days old, who had been in Epstein's clinic, was found to possess anomalies in the trachea, in the heart and aorta, and in the abdominal cavity, among the latter an overlapping of the hepato-duodenal ligament and an absence of the spleen. Just above the bifurcation of the trachea, a third tracheal bronchus 3 millimetres wide was given off on the left side, and was distributed to the

upper lobe of the trilobed left lung. The anomaly in this instance differed from any of eleven hitherto described instances of triple bronchus, all of which are referred to in the paper.

*Compression of the Trachea.*—A case of bronchocele compressing the trachea of a boy 10 years of age, under the care of Clark,<sup>6</sup><sub>Aug. 30</sub> produced such intense dyspnoea that tracheotomy was performed while the patient was almost moribund. No anæsthetic was used, but the first cut caused resistance. This was followed by unconsciousness and complete arrest of respiration. When the thyroid gland was reached an unsuccessful attempt was made to displace it. It was then incised to the depth of about  $\frac{1}{2}$  inch and retracted on each side, exposing the trachea, which was then opened and a tube was introduced. Artificial respiration readily restored normal breathing. The patient did well. The swelling in the thyroid promptly subsided, and the tube was soon definitively removed.

*Morbid Growths of the Trachea.*—Two cases with alarming symptoms and fatal termination are reported by Paul Koch,<sup>37</sup><sub>Oct.</sub> of Luxembourg: I. A captain in the French army, 48 years of age, had a fine barytone voice, which he overused a great deal. Gradual dyspnoea had occurred. An immobile, sessile, red tumor was seen laryngoscopically to obstruct the trachea. Prophylactic tracheotomy was urged, but, on account of its effect on the voice, was refused. A few days later tracheotomy became necessary suddenly at night. The surgeon, declining Koch's counsel to perform the low operation, performed the more easy crico-tracheotomy and introduced an ordinary canula. It was of no service. Blood flowed from the canula and the patient seemed about to expire. A larger canula was hastily introduced with no benefit. Finally, a long and flexible Koenig canula reaching to the bifurcation was introduced, and then the bleeding ceased and respiration became re-established. All went well until the fourth day, when, on removal of the canula, a stream of black blood issued from the tracheal orifice and the patient immediately succumbed, although the canula had been replaced. The surgeon had incised the vascular tumor in his operation. The tumor was a cellular angiosarcoma, with large blood-vessels. II. An advocate, 38 years of age, with great dyspnoea, threatening suffocation, was seen to have a large growth in his trachea. He refused to undergo

tracheotomy, and died suddenly by suffocation three days later. The nature of the growth could not be determined.

Koch calls attention to the difficulties in recognizing these growths. He recommends that the patient's head should be directed downward, and that the light should be directed from below upward, the observer being below the patient.

In referring to the fatal case he recommends tracheotomy to be made as low down as possible, so as to avoid incising the growth.

*Primary Carcinoma.*—After brief descriptions of 14 published cases, Friedel Pick<sup>88</sup><sub>Feb. 11, '91</sub> describes a case from the clinic of Gussenbauer. A man 57 years of age became hoarse, with pain in the throat and cough, and got steadily worse for several months, when dyspnœa and hæmoptysis became superadded. August 15, 1890, the larynx was found congested and swollen. August 26th, low tracheotomy was performed on account of intense dyspnœa with widely audible stridor in both phases of respiration. Severe hæmorrhages from the trachea followed. The dyspnœa was not relieved until a catheter had been passed down to the bifurcation. After prolonged aspiration of liquid and congealed blood and removal of a clot as thick as the little finger, respiration could be maintained through the canula. The canula was removed October 13th, but had to be replaced on the 16th, and the patient died, suffocated, the same day in consequence of the bleeding occasioned by its re-introduction. At the autopsy the next day an extensive and peculiarly ulcerated primary medullary carcinoma of the trachea was found, which projected in part into the œsophagus. It involved the entire right side and a portion of the anterior and posterior walls from the position of the tracheotomy wound clear to the bifurcation, and extended into both primitive bronchi. There was secondary carcinoma of the cervical lymphatic glands, the thyroid gland, and the lungs.

*Tracheotomy.*—Michaël<sup>81</sup><sub>No. 53</sub> saw sudden, asthma-like dyspnœa, with death in a quarter of an hour, in an old man on introduction of the canula after an easy tracheotomy. In a second case similar dyspnœa occurred, but was relieved by withdrawal of the canula. It occurred after every introduction until Michaël excised a small piece of the anterior wall of the trachea, after which the canula was tolerated. He believed that the canula stretched the rigid

cartilaginous rings of the trachea, and thereby so irritated the nerves of the mucous membrane as to produce a reflex dyspnœa.

*Spasm of the Trachea.*—An instance of this rare affection is detailed by Chaput,<sup>286</sup><sub>Aug.</sub> in an hysterical male house-servant 26 years of age. Shortly after his entrance into military service, five years previously, he had had a laryngeal disease following exposure of his legs in cold water while overheated after a long march. He had been more or less hoarse and dyspnœic off and on ever since, and had an attack of influenza in January, 1890, with thoracic complications continuing two months and a half. At this time dyspnœa augmented, and stridor became superadded. The larynx was found practically normal on inspection, and the diagnosis was made of tracheal stenosis, probably of syphilitic origin. Tracheotomy was performed. Digital exploration of the inferior portion of the trachea failed to disclose any lesion. Digital exploration of the larynx provoked violent cough and an intense spasm, which forcibly compressed the finger. A canula was inserted for moral effect and was removed the following day. Respiration has been normal ever since the wound, and there has been no stridor. The wound united without incident.

A similar instance is referred to, published by Landgraf,<sup>69</sup><sub>p. 43</sub> in a man 31 years of age, in whom the tracheal spasm, as well as a concurrent hysterical paralysis of the larynx, disappeared after catheterism of the trachea and of the two primitive bronchi under topical cocaine anæsthesia.

#### DISEASES OF THE ŒSOPHAGUS.

*Membranous Œsophagitis.*—A case of exfoliative œsophagitis has been reported by von Reichmann.<sup>520</sup><sub>July 17</sub> A man 33 years of age had suffered from slight dysphagia for more than ten years. His œsophagus became suddenly occluded by a mass of meat. On the fifth day he expelled a mass of membrane of about 100 cubic centimetres in bulk, but without any improvement in swallowing. An obstruction was detected in the lower third of the œsophagus and was readily overcome without much pressure. Some days later some similar membrane was passed with the fæces. Some of the pieces vomited were 15 centimetres in length, some were 3 centimetres in breadth. They were composed of multiple layers of squamous and strongly cornified epithelium.

*Perforation of the Œsophagus in Empyema.*—A. F. Vaelcker <sup>22</sup><sub>Dec.17</sub> reports an instance of neglected empyema in a boy 6 years of age, in whom, some weeks after the operation, fluids that were swallowed escaped through the artificial opening which had been established for the relief of the empyema. The autopsy revealed erosion of the fifth and sixth ribs near their heads, of the ninth rib, and of the sides of the bodies of the fifth and sixth dorsal vertebræ. There were two openings in the œsophagus opposite the eighth and ninth dorsal vertebræ, the lower one just above the diaphragm, the upper one about  $\frac{3}{4}$  inch higher up.

*Stricture of the Œsophagus.*—E. F. Ingals, of Chicago, <sup>59</sup><sub>July 5</sub> reports, among cases of stricture, one instance of fibrous stricture of many years' duration, in a gouty subject, whose brother and one of whose nieces seem to have been similarly affected, and one of membranous stricture overcome by rupture with the œsophageal bougie. A case of cicatricial stricture in the upper third, due to gluttony of a corrosive fluid with suicidal intent, has been reported to the Parisian Académie de Médecine <sup>22</sup><sub>Oct.29</sub> as cured in six weeks by the electric linear treatment. J. A. Fort <sup>100</sup><sub>Oct.16</sub> reports an interesting case produced by swallowing a potash solution and completely cured by some twenty sittings of linear electrolysis combined with dilatation. In this instance the stricture was almost impassable. The same observer records <sup>290</sup><sub>Aug.5</sub> some experiments made in a case of linear stricture near the cardia to ascertain the influence of the continuous electric current on the pneumogastric nerve. A small platinum negative electrode being within the stricture and the positive electrode on the left side of the abdomen, a current of 11 milliampères, passed for two minutes, increased the pulse-rate from 70 to 90 with the intermissions and excited some contraction of the facial muscles near the nose. A current of 30 milliampères increased the pulse from 84 to 120 and produced similar contraction of the facial muscles. On another occasion, the œsophageal electrode being more deeply situated, there was not much change in the pulse; but the withdrawal of the electrode produced intense pain in the chest, radiating to both ears. These pains recurred several times in the day, and were always elicited by a larger electrode than usual with a current of 22 milliampères.

Our corresponding editor, Gouguenheim, <sup>73</sup><sub>May 29</sub> cites a case of



Terillon, in which impassable cicatricial stricture required gastrostomy. Some months later dilatation was successfully accomplished through the fistula, and the wound was then closed. The cure has been permanent. Electrolysis has been successfully practiced by Vandal Franks, of Dublin, <sup>96</sup><sub>Nov.</sub> in 2 cases, eleven sittings being used in one instance and nine in the other.

*Carcinoma of the Œsophagus.*—Our corresponding editor, Gouguenheim, calls attention to an early indication of the disease noted by Gaucher in suffocative attacks due to compression of the recurrent nerves, and occurring before the dysphagia and the mechanical symptoms of constriction. A case of death by hæmatemesis from ulceration of an epithelioma of the œsophagus into the aorta has been reported by Vimont. <sup>7</sup><sub>May 16</sub> Instances of death by erosion into the trachea have been reported by Collins <sup>6</sup><sub>Apr. 12</sub>; by perforation into the lung and pulmonary gangrene, Harris <sup>2</sup><sub>Dec. 21, '89</sub>; by dyspnoea from suppuration of the thyroid gland, Birchhof. <sup>34</sup><sub>No. 12</sub>

Sick <sup>69</sup><sub>Dec. 18, '89</sub> reports a case in which the patient, a female 52 years of age, survived a gastrostomy in one procedure by Schede nearly eleven months. Le Fort <sup>67</sup><sub>Jan. 15</sub> discusses at length the therapeutic indications in cicatricial and cancerous strictures of the œsophagus, and commends treatment by dilatation with certain forms of sound which he illustrates. Treatment by permanent retention of sounds is growing in favor. Michel Gangolphe, <sup>211</sup><sub>Nov. 27, '88</sub> of Lyon, discusses the subject of the method of treatment with considerable historic detail, and reports 2 cases of his own. He contrasts this treatment with that by gastrostomy. He deems the alimentation by the artificial orifice insufficient to support nutrition, and far inferior to alimentation by means of the catheter in the œsophagus, and he would reserve the operative surgical procedure for exceptional cases of invasion of adjacent organs, frequent hæmorrhages, and impossibility of catheterization.

Five cases of malignant stricture of the œsophagus, satisfactorily treated by Symond's method of permanent tubage (see ANNUAL for 1890), are reported by S. J. Mixter, <sup>2</sup><sub>Oct. 23</sub> of Boston, who feels thoroughly convinced that the method is of the greatest value in suitable cases. I have reported an instance <sup>1160</sup><sub>'89</sub> in which I succeeded in overcoming a malignant stricture at the cardiac orifice, as verified at the autopsy, thus showing that strictures at this extremity can occasionally be managed by Symond's method.

*Sarcoma of the Oesophagus.*—A case occurring in a boy 4 years of age is reported by B. H. Stephan, of Zaandam. <sup>366</sup>  
Nov. 20, '89

## INTUBATION OF THE LARYNX.

By E. FLETCHER INGALS, A.M., M.D.,

CHICAGO.

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INTUBATION has steadily grown in favor during the past year, and the literature of the subject has been enriched by physicians both in this country and abroad. Among the most noteworthy articles are the comprehensive paper by Ranke, <sup>34</sup><sub>v.36,p.477,500,517</sub> read at a meeting of the *Deutscher Naturforscher und Aerzte*, in Heidelberg, September 19, 1889, and a similar paper presented by him <sup>34</sup><sub>Sept.9,16</sub> at the International Medical Congress, held in Berlin, and that by George M. Lefferts, of New York, <sup>59</sup><sub>Oct.4</sub> upon "Intubation of the Larynx in Acute and Chronic Syphilitic Stenosis," read before the Tenth International Medical Congress in introducing a discussion upon syphilis of the upper air-passages.

Ranke states that he was first induced to try intubation in young children between 1 and 2 years of age because the reports of American physicians indicated that the results of the operation in young infants were much better than those of tracheotomy, but that subsequently his experience had induced him to adopt intubation as the primary operation in all cases. He considers the risks of the operation, when done with O'Dwyer's instrument and under proper precautions, very much less than those of tracheotomy.

Koch <sup>41</sup><sub>Sept.15</sub> prefers intubation to tracheotomy in diphtheria because it is more easily performed and offers equally as good chances of after-treatment. In the same article he speaks of a most interesting experiment which was made with reference to the value of intubation and tracheotomy in the *Kinder Krankenhaus*, Amsterdam, where, out of 230 children suffering from diphtheria, 143 had required surgical intubation. These were operated upon alternately by intubation and tracheotomy, without regard to the nature of the case. Out of these, the total number of recoveries was 51, or 34.7 per cent. Of those tracheotomized 30.3 per cent. recovered, while of those intubated 35.3 per cent. recovered. The

number is not large, but the experiment is most interesting, and, so far as it goes, shows the value of this new operation.

Bays<sup>6</sup><sub>Sept. 20</sub> reiterates the caution which has already been given, that in all cases of intended intubation the surgeon should have instruments ready at hand for tracheotomy, and he advises, further, that we should not only have the consent of the parents for intubation, but for tracheotomy, also, if the latter should become necessary.

Ranke states that, out of 141 cases of intubation in Germany, it has been necessary to remove the intubation tube and perform tracheotomy at once in 4 cases, and that later it has often been deemed desirable to do tracheotomy. For example, Thiersch subsequently performed tracheotomy in 17 out of 31 cases in which he had done intubation: in 11 for respiratory obstruction and in 6 because of difficulty in deglutition. However, none of these recovered; but, of the remaining 19 cases, 3 had recovered.

From this and other reports it appears that frequently our European *confrères* become alarmed and resort to tracheotomy where intubation has already accomplished all that could be done for the patient.

Ganghofner, of Prague,<sup>366</sup><sub>Nov. 30, '99</sub> mentions 2 cases in which it was impossible to introduce the laryngeal tube, owing to smallness of the glottis, which he attributed to œdema. These are the first cases of this sort we have seen reported, but I have, during the past year, met with a similar case, in the person of a child 16 months of age, where it was impossible to introduce the smallest O'Dwyer tube, although very considerable force was used in the attempt. In this instance the resistance met by the tube could not be satisfactorily accounted for by the theory of œdema. Forceful efforts were made to introduce the laryngeal tube because the consent of the parents could not be obtained to tracheotomy, and no other remedy was left. But the child had to be left to its fate.

F. E. Waxham<sup>61</sup><sub>Oct. 11</sub> states, with reference to the time of operation, that he does not advise it early because many patients will recover from simply medicinal treatment. He advises "that when the voice becomes whispering and the cough becomes suppressed; when, in addition, dyspnœa becomes urgent and the loud stridor is heard both on inspiration and expiration; and when there is marked recession of the chest-walls, if the symptoms are continu-

ous and not relieved by emetics, it is time to operate." He states that in nearly all instances he has operated only upon extreme cases.

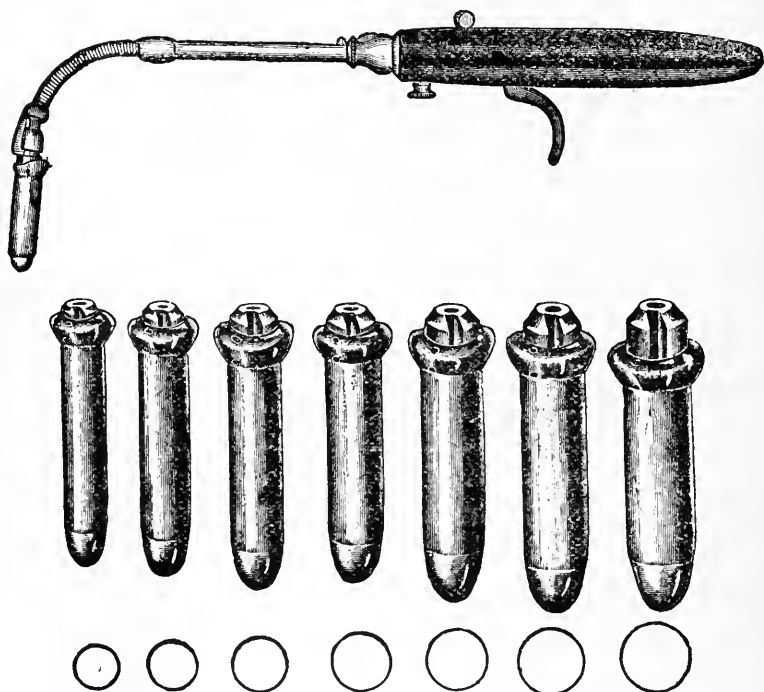
D'Heilly<sup>366</sup><sub>B.39,H.1,2</sub> recommends intubation under the following conditions: 1. In very young children, in whom tracheotomy offers only slight chances of recovery and in whom even a slight loss of blood would be harmful. 2. In mild cases of croup which appear to be likely to continue as such and for which tracheotomy is a severe remedy. 3. In very severe cases of toxic diphtheria in which the patient is already weakened to such a degree that he might not be able to endure tracheotomy and its consequences. 4. In cases of secondary croup following measles, in which tracheotomy is never successful. 5. In all cases in which tracheotomy is impossible or dangerous.

Ranke<sup>366</sup><sub>B.39,H.1,2</sub> says that intubation will never be able entirely to displace tracheotomy; that these two methods of operation are not to be compared as rivals, but as having complementary relations to each other, for it will sometimes be necessary to use one of these operations singly, but sometimes to combine it with the other, whereby many lives will be saved. As a rule, which admits of numerous exceptions, treatment should be begun with intubation and tracheotomy should follow when the former is not successful.

Almost the only accident to be feared in intubation is the pushing down of the membrane ahead of the tube so as to completely close the trachea. Singularly enough, this accident has occurred five times to our honored corresponding editor, Ramon de la Sota,<sup>503</sup><sub>Oct.12</sub> of Sevilla, Spain, in a comparatively small number of operations. The accident has occurred frequently in this country, but, judging from my own experience, I believe that it does not occur in more than 5 per cent. of the cases, and that in only a small number of these is it serious, for, as a rule, as soon as the tube is removed the membrane will be coughed out. In cases where we have reason to believe that the membrane has become loosened and detached below the tube, as indicated by large râles and a hoarse cough, the tube should be removed, when the cough which immediately follows will almost invariably expel the membrane. Waxham<sup>61</sup><sub>Oct.11</sub> states that in these cases nothing is more dangerous than to introduce a large tube that fits tightly; he prefers a smaller-sized tube than the one indicated by the age of the

child, in order that it may be expelled by the cough in case the membrane becomes loosened and blocks the opening.

To avoid the danger from false membrane becoming impacted in the tube, O'Dwyer has devised a set of large, short tubes, which are designed to be worn for only from twenty-four to forty-eight hours. He states that he has tried many instruments in his endeavor to get one perfected that would permit of the expectoration of loosened membrane, and he thinks that these tubes are



O'DWYER'S LARGE TUBES TO AVOID IMPACTION OF FALSE MEMBRANE.  
(*North American Practitioner.*)

successful. He also believes that they would frequently be useful in cases of small, foreign bodies in the trachea, which might be expelled through them.

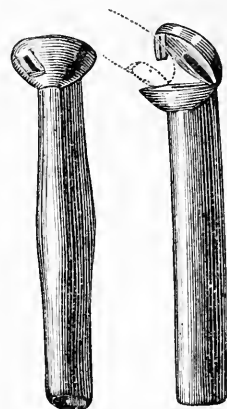
G. Hunter McKenzie<sup>2</sup><sub>May 24</sub> reports 2 cases in which death occurred from clogging of the tube,—1 by a clot of blood and the other by dried secretions. I have recently removed a tube introduced by another physician, which was completely closed by dried secretions; however, the child fortunately obtained sufficient air about it to support life, and ultimately recovered.

As to the danger of pressure necrosis from intubation, Ranke states that German physicians are not fully agreed. Thiersch declares erosions of the mucous membrane to be unavoidable where the tube is long retained, but states that they are generally quite superficial. In 2 of Ranke's secondary cases perforation of the trachea occurred from friction of the end of the tube in swallowing. Ganghofner<sup>306</sup><sub>Nov.30</sub> has observed erosion of the mucous membrane and exposure of the cartilages at the autopsy in 4 of his 42 cases. In 3 of Ranke's 113 cases the tube has been swallowed, but it has appeared in the feces in from three to eleven days without injury to the child.

O'Dwyer has also devised a modification of his tubes designed to render extraction easy. It consists of a hinged top with little, sharp projections upon the under side in which to engage the finger-nail, so that the nurse or attendant can remove it, in cases of sudden obstruction, without the use of the extractor.

W. H. Z. Staveley<sup>6</sup><sub>Dec.21,'89</sub> describes a modification of O'Dwyer's introducer as follows: "First, a small ring, placed at end of the stem, on the right side; a string having been threaded through the hole in the shoulder of the tube, it passes through the ring and is held against the handle with the forefinger of the right hand; this effectually prevents the tube from slipping off the pilot, keeps the string close against the stem, and, being on the right side, does not interfere with the manipulations of the left hand. Second, the spring-claws are dispensed with altogether and the tube can readily and with certainty be pushed off the pilot when introduced into the larynx with the left forefinger. This makes the instrument a much cheaper one and more easy to clean. This latter is an important point if there is only one set of instruments, which may have to be used both for cases of diphtheria and other emergencies.

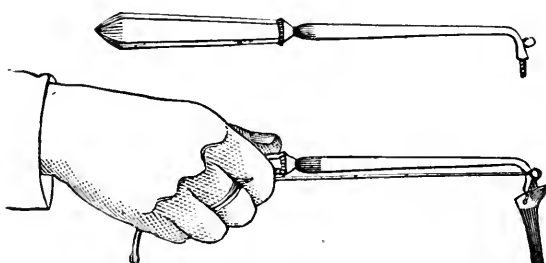
O'Dwyer<sup>771</sup><sub>June</sub> records a case of intubation for diphtheria in an adult in which dyspnoea was not relieved when the tube had been inserted into the larynx. He concluded that it had passed into the œsophagus, but upon drawing it outward a little was found



O'DWYER'S MODIFIED  
TUBES.  
(*New York Med. Journal.*)

that respiration was free, indicating that the tube had been obstructed by swelling of the epiglottis. To obviate this he inserted the tube of next larger size, which had a much larger head, that allowed the patient to breathe easily. He suggests that in case of such emergencies, if the physician had no larger tube at hand, he could enlarge the head of the tube by slipping over it a section of rubber tubing from below. In cases of intubation for croup O'Dwyer recommends that a small-sized tube be used in order to prevent erosion of the mucous membrane.

The difficulty in swallowing after intubation, which has generally been attributed to imperfect closure of the epiglottis, is believed by Ranke<sup>366</sup><sub>Nov. 30</sub> to be largely due to infiltration of the muscles, in which opinion he agrees with Lissar Krönlein. Some European physicians still urge as an objection to intubation the difficulties of



MODIFICATION OF O'DWYER'S INTRODUCER.  
(Lancet.)

removing the tube for cleansing, and the difficulty of swallowing when the tube is *in situ*. These obstacles have been long ago met and surmounted in this country, as will be seen in the former numbers of the ANNUAL.

The comparatively unfavorable results of this operation in some of the European hospitals are undoubtedly correctly attributed by Ganghofner to the malignant nature of the epidemic during which it was practiced. The danger of schluck-pneumonia, which has been so much feared by many operators, is not admitted by O'Dwyer, and Ranke states that it is rarely found.

The percentage of recoveries after this operation is somewhat better than formerly. Ranke states, for Europe, that out of 413 cases operated upon in Germany, Austria, and Switzerland, 34 per cent. recovered. Waxham's reports show the recovery of about 35 per cent., while Fields, of Albany, N. Y., presents a series



of 100 cases in which 38 per cent. recovered. If records of all cases operated upon could be obtained it might be found to be only slightly better than that shown by Dillon Brown, of New York, in 1888, who found 27.3 per cent. recoveries out of about 2500 cases.

However, as the type of diphtheria in this country seems to have been growing somewhat less malignant for the last two or three years, it is probable that the percentage of recoveries would now amount to about 30, or possibly more than this.

#### INTUBATION FOR SYPHILITIC STENOSIS OF THE LARYNX.

At the Tenth International Medical Congress, Lefferts, of New York, <sup>59</sup><sub>Oct.4</sub> presented a most interesting paper upon this subject, in which he reported several cases and detailed as carefully as possible the indications for this form of treatment in this disease. Of the efficacy of intubation in syphilitic stenosis, he says: It certainly affords, in a large proportion of cases, the simplest and most practical means yet devised of quickly and efficiently relieving the dyspnœa of acute laryngeal stenosis, thus avoiding tracheotomy, and for dilating chronic cicatricial stricture with speed and certainty, thus dispensing with the necessity of wearing a temporary or permanent tracheal canula. For tracheotomy it offers an efficient substitute devoid of danger, and over the method of Schroetter it presents the advantages of avoiding the necessity of a preliminary tracheotomy and affords a possibility of continuous and prolonged retention without risk of inordinate discomfort. To quote more exactly, he states: "Doubtless the future will modify, perhaps greatly extend, the limitations placed upon the procedure, but to-day we may claim certainty of fulfillment in some, reasonable expectation in others, of the following general indications. Some, therefore, I advance with confidence, others with hesitation, but submit all for your candid criticism:—

"Class I. The immediate relief of dyspnœa in all cases of acute syphilitic stenosis of the larynx by mechanically and temporarily affording an artificial passage for the respiratory current through the intubation tube.

"Class II. Facilitating and hastening by either equable and prolonged progressive or specially-directed pressure of the intubation tube, the absorption of acute inflammatory effusions, or the

thickening and induration attendant upon chronic syphilitic inflammation of the larynx.

“Class III. Forceful dilatation and continuous distension by means of the intubation tube of slight and recently-organized membranoid or band-cicatrices.

“Class IV. Progressive dilatation by means of a series of intubation tubes of cicatricial strictures of the larynx subsequent to their incision by some form of cutting laryngeal dilator.

“Class V. Divulsion and progressive dilatation, incision, and subsequent distension, the former being made through the larynx or from below through the tracheotomy wound, or systematic continuous dilatation by such specially-adapted intubation tubes as may be required in cases which vary greatly in the nature and extent of the lesion, in all cases of chronic and extensive cicatricial stenosis of the larynx with displacement and distortion of the laryngeal parts, the result of dense cicatrization following gummatous degeneration in tertiary syphilis, and where a tracheotomy tube may or may not be worn; and in the following cases: in dyspnœa due to abductive immobility of the vocal cord dependent upon syphilitic, non-suppurative, adhesive arthritis of the arytenoid articulations, or their mechanical fixation by either plastic infiltration of the tissues in their neighborhood leading to adhesive perichondritis and spurious ankylosis, or cicatrices of the same parts, which bind them in an immobile position, and upon which well-directed pressure by the intubation tube will exert a favorable influence in promoting absorption of the effused material or forcibly break up cicatricial attachments and free articular movements.

“Class VI. In dyspnœa dependent upon abductor paresis from commencing degenerative processes of syphilitic origin in the abductor muscles themselves, in which the preservation by means of the intubation tube of even a small respiratory opening may stimulate normal physiological movements and preserve nutrition by maintaining muscular activity.

“It is understood that in all the above classes of cases intelligent and energetic antisymphilitic treatment is employed to combat the accompanying diathesis, and that the tracheotomy canula, if it be worn, is no contra-indication or barrier to the use of an intubation tube.” Owing to the difficulties of reaching the larynx with

the finger in the adult, the laryngeal mirror will often afford aid in guiding the end of the tube into the glottis, but the tube must ultimately be forced down by the finger to its proper position in the larynx. The laryngeal mirror will also be found of the greatest benefit in introducing the extractor for the removal of the tube.

The large size of the tube required is no objection to its use, for experience has shown that in adults with chronic inflammation of the tissues there is much less liability to ulceration than in children where the larynx is the seat of inflammatory infiltration. At first the smallest tube that will permit of easy respiration should be introduced, and the sizes should be gradually increased from this time onward until the glottis is sufficiently open. The varying size of the heads of these tubes changes the point of pressure in the larynx so that erosion or granulations are prevented. At first the patient is liable to have difficulty in deglutition, but this is soon overcome. Schluck-pneumonia has not thus far resulted from this treatment.

The tubes used for this purpose consist of O'Dwyer's set of 10 adult tubes, the smaller of which are made of brass gold-plated, the medium size of brass with a rubber head, and the larger ones of hard rubber.

W. K. Simpson, of New York, <sup>1</sup><sub>Feb. 22</sub> has reported 4 cases of laryngeal obstruction in the adult treated in this manner, and several others are reported by various observers.

#### INTUBATION FOR THE REMOVAL OF THE TRACHEAL CANULA.

Several cases have been reported where it has been found difficult or impossible to remove the tracheal canula weeks or months after tracheotomy has been done, although the larynx and trachea appeared free. Of these, A. Gampert, <sup>118</sup><sub>Jan.</sub> Hôpital Trousseau, reports 2 exceedingly interesting cases where repeated attempts at removal of the tracheotomy canula had proved futile, which were promptly cured by intubation, 1 in twenty-four and the other in twenty-nine hours.

Andersen <sup>373</sup><sub>v. 8, p. 189</sub> reports a similar case, though in this the intubation tube was allowed to be worn for ten days. I have had some personal experience in intubation for this purpose, and have found it eminently satisfactory.

## INTUBATION FOR THE REMOVAL OF GRANULATIONS AND PAPILLOMATA.

Ranke <sup>5</sup><sub>Feb.</sub> mentions 2 cases of stenosis from granulations, 1 of which was readily cured by intubation; and 2 cases of large papillomata of the larynx, in which he has had excellent results from prolonged wearing of the intubation tube. I believe that, although this procedure may occasionally prove beneficial, it is doubtful whether it will be of much service in the majority of cases. However, combined with Voltolini's method, evulsion by forceps, or scraping by curette, the method will doubtless prove of great value in the treatment of these growths when occurring in young children.

J. F. Baldwin, of Columbus, Ohio, <sup>59</sup><sub>Mar. 8</sub> reports a large laryngeal papilloma in a child 8 years of age, which was cured by this method.

## INTUBATION OF THE ŒSOPHAGUS FOR STRICTURE.

J. Solis Cohen <sup>771</sup><sub>May</sub> exhibited to the Philadelphia County Medical Society some small funnel-tubes intended to be placed in the strictured portion of the œsophagus, so that the patient could swallow his food and perhaps be saved the necessity of more serious treatment. They were to be passed by means of a conductor, and were provided with strings to facilitate their removal. They were constructed of such material that they might be worn for months with but little change. The silk thread was attached either to the tube or brought out the mouth. He recommends that the tube be withdrawn every few days for purposes of inspection and cleansing, and should it be found quite movable it may be left out altogether for awhile, if the dilatation be sufficient to permit the passage of food to the stomach. It should be re-introduced as soon as the stricture begins to tighten.

## DISEASES OF THE THYROID GLAND.

By FRANKLIN H. HOOPER, M.D.,

AND

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BOSTON.

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*Anatomy and Physiology.*—Pilliet<sup>7</sup><sub>June 29</sub> finds that the thyroid gland in the aged is small, dark in color, granular on section, and does not show the characteristic alveoli of the organ. The secretion is extremely slight. The interstitial tissue is much developed, and there is often marked sclerosis. The gland-tissue, instead of being spongy and vesicular, as in adults, is glandular, as in the fetus. In this form there are epithelial canals in the centre of the lobules corresponding to excretory ducts which alone are filled with colloid material.

Pisenti e Viola<sup>75</sup><sub>Sept. 15</sub> discovers, in the normal thyroid, spaces in the connective tissue surrounding the follicles which are connected by small canals with each other and have no endothelium. Into these spaces the colloid substance from the follicles goes. How the secretion of the gland enters the circulation is not known, as no connection could be observed between these spaces and the blood-vessels.

Wölfler<sup>2</sup><sub>Nov. 22</sub> discusses the origin of the thyroid and accessory thyroids in the light of His's views on the development of the branchial arches, pointing out the existence of accessory thyroids in the trachea and citing a pertinent case of Radestock's.

Grützner,<sup>1</sup><sub>Apr. 26</sub> from physiological experiments, concludes that the thyroid has the function of neutralizing certain products of the economy harmful to the nervous system. The following experiment is interesting as going toward proving this conclusion: If the blood of an animal from which the thyroid had been previously extirpated is infused into the veins of another animal, the latter shows symptoms similar to those observed by Kocher in cachexia thyreopriva and also to those of operative myxœdema in man.

H. Stieda<sup>61</sup><sub>Oct.18</sub> has confirmed the observations made by Nauwerck in 1888, that rabbits bear extirpation of the thyroid, while cats and dogs are destroyed by the operation. The relation of the weight of the pituitary body to that of the thyroid in rabbits he found to be 1 to 3.3, while in dogs it was 1 to 15 or 20. Stieda found an increase in weight and volume of the pituitary body after extirpation of the thyroid. This increase probably corresponds to an increase in function that, in part, takes the place of the extirpated thyroid.

Ewald and Rockwell<sup>246</sup><sub>No.47</sub> have found that the removal of the thyroid causes no perceptible alteration in the health of pigeons. They chose pigeons as pure vegetable feeders, to corroborate the earlier observations of Laugendorff and Ewald, in which they ascribed the difference in dogs and rabbits, after the loss of the thyroid, to the difference in diet. In not one of the pigeons operated on was the hypophysis enlarged.

In this connection the following case is of interest: Viola<sup>75</sup><sub>Sept.15</sub> found a stroma fibrosum in a patient who died of carcinoma uteri. The hypophysis showed enlarged interfollicular spaces. These, as well as the follicles and blood-vessels, contained far too much colloid substance. The hypophysis seems to have a function analogous to that of the thyroid.

S. Autokratoff<sup>47</sup><sub>p.3</sub> concludes, from experiments on animals, that the symptoms following extirpation are due to suspended thyroid function. On microscopical examination of the brain and spinal cord of the animals which died, he found the gray matter cloudy and infiltrated with leucocytes. Changes in the cord were more marked than in the brain.

*Tumors.*—Orcel<sup>17</sup><sub>June 19</sub> divides them into tumors of stroma and tumors of epithelium. Either may be benignant or malignant. Orcel considers the latter only, which he divides into interstitial (presenting here and there vestiges of the normal gland, but the mass of which corresponds to the type of connective-tissue cancer) and glandular, which are the more frequent.

Cancer of the thyroid<sup>96</sup><sub>Apr.</sub> develops between 40 and 60 years of age; 3 out of every 4 cases follow goitre. Prognosis is very unfavorable; average duration of life is six months. Palliative measures alone are permissible.

## GOITRE.

Wolff<sup>5</sup><sub>Apr.</sub> is of the opinion that a reciprocal relation exists between the growth of a goitre and the degree of compression of the trachea. The goitre produces stenosis of the trachea, and this again causes a swelling of the tumor. It is therefore sufficient, in an operation for dyspnoea from goitre, to free one aspect of the trachea and remove just so much gland that the remainder cannot lie directly on the trachea. Wolff reports 2 successful operations on this principle. According to J. Berry,<sup>2</sup><sub>Jan. 25</sub> the deformity of the trachea in goitre is generally lateral flattening, with bending and twisting, according to the shape of the goitre. Antero-posterior flattening is very rare.

Charvot,<sup>3</sup><sub>Oct.</sub> in speaking of sporadic infectious thyroiditis, says that typhoid thyroiditis comes on at the end of convalescence. The inflammation may not go beyond the phlegmonous stage, and then terminate in resolution. More commonly it goes on to suppuration, which may be dangerous if not treated in time. The study of published cases brings to light one important fact, *i.e.*, that all of these cases occur in subjects who have had goitre, or who come from a goitrous family or region. Charvot reports 2 cases of rheumatic origin (rare), also 4 of malarial origin, yielding readily to antimalarial treatment. There is also a thyroiditis of variola, tuberculosis, and mumps, of which cases have been described. Matignon<sup>70</sup><sub>Feb. 23</sub> reports a case of the last variety.

Wölfler<sup>84</sup><sub>Nov. 15</sub> divides cysts of the thyroid into (*a*) serous; (*b*) gelatinous (uni- or multi-locular with columnar epithelium, and here and there papillary vegetations, which may give rise to hæmorrhage); (*c*) hæmorrhagic cysts from apoplexy into medullary substance; (*d*) collected cystomas; (*e*) multiple-cyst formation. The spontaneous course of a cyst leads occasionally, by bursting or fibrous degeneration, to healing.

*Treatment.*—Evacuation and injection of irritating substance.<sup>84</sup><sub>Nov. 15</sub> Large statistical material (Billroth's and Bruns's clinics) shows 70 per cent. cure; mortality, 1 to 2 per cent. Disadvantages of method are: suppuration, anxious symptoms in first days, slow shrinkage, occasional dangerous or fatal asphyxia after injection of tincture of iodine. This method cannot be carried out in paralysis of the vocal cords, great flattening of trachea (not improving after puncture), multilocular cysts, and those which bleed

or do not collapse after puncture. In these cases he recommends division and drainage. Division is especially suitable for hæmorrhagic cysts, and is recommended in old people. By this method the number of deaths is diminished, but also the number of definite cures (fistula remaining at times). Intra-parietal enucleation possesses the greatest advantages as a method of treatment. The difficulties are that the cyst may be attached to the recurrent nerve, or there may be many or old hæmorrhagic cysts. Wölfler warns against the enucleation of inflamed or suppurating cysts. In case of great hæmorrhage, enucleation must be replaced by one-sided extirpation.

E. F. Ingals<sup>61</sup><sub>Feb.15</sub> reports 2 successful cases of electrolysis of cystic goitres after other methods had failed. Three or four sittings only, at intervals of one week, were necessary. E. Woakes<sup>6</sup><sub>June 21</sub> reports 4 cases of cystic goitre successfully treated by evacuation and injection of a few drops of chromic acid in an "acid carrier." E. J. Brown<sup>779</sup><sub>Aug.</sub> suggests the following medical treatment for goitre, and reports 6 more or less successful cases. He uses an ointment of 20-per-cent. red oxide of mercury (trituated to an impalpable powder) with lanolin (in warm weather, simple cerate). This strength is gradually increased to, in some cases, a strength of "complete saturation." This ointment is rarely irritating, except in very warm weather, when its strength should be reduced. No systemic effects of mercury observed.

Mosetig-Moorhof<sup>101</sup><sub>Mar.</sub> has treated soft varieties of goitre for the past ten years by injections of iodoform, with slight constitutional reaction and excellent results. The following solution was used under the strictest antiseptic precautions:—

R Iodoform,	. . . . .	1.0 part.
Æther, .	. . . . .	5.0 parts.
Ol. olivæ,	. . . . .	9.0 "
Or,		
R Iodoform,	. . . . .	1.0 part.
Æther,	. . . . .	
Ol. olivæ,	. . . . .	7.0 parts.

Beginning injection is 1 gramme (15½ minims); the author has injected as much as 4 grammes (62 minims) at one time, injected in two places. Intervals should be five to eight days. Five to ten injections, according to the size, etc., of the tumor, are necessary for a cure. Absorption continues for some time after



last injection. Frey<sup>113</sup><sub>Oct.12</sub> speaks enthusiastically of this method. Simplicity and absence of danger are strong recommendations for its use. In 65 cases of his own he obtained not the slightest bad symptom. He obtained good results in cystic and even fibrous goitres. Obalinski<sup>109</sup><sub>June</sub> publishes a series of 50 operations in goitre (35 women and 15 men), with 2 deaths. The methods of treatment were: 1. Tapping, with consecutive injection of tincture iodine. 2. Incision, with drainage in 3 cases, of which 2 were cures (1 developed obstinate fistula). 3. Excision in 14 cases, with 1 death from pyæmia. 4. Partial excision in 5 cases, with 1 death immediately after operation. 5. Enucleation of degenerated portion in 23 cases, with the best results. 6. Ligature of arteries in 4 cases. 1 the author considers useless; 5 is the most rational method; 4 is, however, indicated in diffuse hypertrophy; 3 and 6 only in cases of malignant or highly vascularized growths. Obalinski has lately used a combination of enucleation with resection of a portion of healthy tissue, to avoid subsequent hæmorrhage, with good results. Zesas<sup>13</sup><sub>Apr.</sub> reports a series of 50 more extirpations (all benign goitres) with 1 death; 34 patients were women, 16 men. In 34 cases enucleation was done, in 16 partial thyroidectomy. In 40 cases the wound healed by first intention, in 9 by second. Slight transient symptoms of cachexia strumipriva followed in 1 case of excision and multiple enucleation. In enucleation the chief difficulty lies in finding the boundary between healthy and diseased gland-tissue. When this is done the operation is almost bloodless.

Rosciszewski<sup>109</sup><sub>July</sub> treated 19 cases of goitre by ligature of arteries. In 18 cases all four vessels were tied; in 1 only those on one side. One death from consecutive pneumonia. Immediate disappearance of symptoms followed the operation. The goitres decreased, on an average, 4 centimetres in four weeks. Further involution was slow but steady. Indications, general or diffuse parenchymatous goitres of moderate size; contra-indications, malignant diseases or cysts.

V. Eiselsberg<sup>13</sup><sub>Apr.</sub> says that tetany (*tétanie*) following thyroid extirpation is very dangerous. Of more than 30 cases following thyroidectomy recorded there were 7 cures, 13 deaths, and 3 cases in which the disease became chronic. In 53 total extirpations in Billroth's clinic the affection appeared twelve times, of which 8 were

fatal, 2 chronic, and 2 recoveries. The only and best therapy is prophylaxis. Avoid total extirpations. In 115 partial extirpations in Billroth's clinic no case of tetany appeared. V. Eiselsberg has done thyroid operations on 100 cats, with the following results: 1. Wounds healed by first intention in 87, after suppuration in 13. 2. Total extirpation in 33; tetany invariable. This could not be prevented by previous transplantation of a thyroid from another cat, or subsequent transplantation of the thyroid in the same cat. 3. One-sided extirpation was well borne in 27 cases. A marked hypertrophy of remaining half only seen in a few cases in young cats. 4. Total extirpation, one-half at a time, was equally fatal with 2 (15 cases). 5. Extirpation of more than four-fifths of the gland almost always caused tetany; not, however, always ending fatally. 6. Enucleation always caused tetany, to which most of the animals (12) succumbed. This disease appears independent of other injuries from the wound or process of healing. V. Eiselsberg thinks that tetany and cachexia strumipriva are closely related, the one being the acute, the other the chronic result of total extirpation. These divisions (tetany and cachexia strumipriva) would seem to correspond with Horsley's acute and chronic cachexia strumipriva, which seem better designations. V. Eiselsberg<sup>96</sup><sub>Mar.</sub> offers, as an explanation of the apparently inconstant *sequelæ* of total extirpation in man,—sometimes tetany, sometimes cachexia, and sometimes neither,—that in man the operation is done on a pathologically-altered gland, that an accessory thyroid is more common than was supposed, and that in some supposed total extirpations a small piece of the gland has been left.

#### EXOPHTHALMIC GOITRE.

*Pathology.*—H. W. G. Mackenzie<sup>6</sup><sub>Sept. 29</sub> considers the disease a widely-distributed derangement of the emotional nervous system, but thinks that alteration in function of the thyroid has much to do with many of the secondary symptoms. Seeligmüller,<sup>69</sup><sub>Mar. 29</sub> speaking of the origin of exophthalmic goitre, refers to Filehne's half-forgotten fragmentary experiments as offering a certain support to the bulbar theory. (Filehne, by destroying the anterior quarter of the restiform body in guinea-pigs, caused increased pulse-rate, often accompanied by exophthalmus and once by struma.) Durdafi has fixed the point more precisely in the tuberculum acusticum.

The only autopsical discovery was reported in the last ANNUAL (Hale White's case).

Bienfait<sup>52</sup><sub>July 26</sub> describes some experiments of his own after the manner of Filehne's. His conclusions are that section of the restiform bodies produces considerable trouble with the circulation; also nervous excitement, trembling, tonic and clonic convulsions, exophthalmus in 37 per cent. of the cases, hyperæmia of the thyroid in 24 per cent. In a certain number (not given) of cases the principal symptoms of exophthalmic goitre were present. The experiment is a delicate one, as one has to manœuvre in a restricted field in which are many nerve-centres.

G. M. Hammond<sup>1</sup><sub>Jan. 25</sub> is strongly inclined to believe that the lesion in this disease is situated in the medulla oblongata. He adds, however, that it may not be long before the disease is traced to the cortex, for it is well known that mental shocks, which unquestionably affect the cortex, have resulted in exophthalmic goitre. Although many cases show (post-mortem) disease of the sympathetic nerve, others are recorded where no changes can be discovered. Any one lesion of the sympathetic could not cause all the symptoms which can be produced artificially through it, since some follow irritation and others paralysis.

*Symptoms.*—Writers do not seem to agree as to the order in which the symptoms appear, Nothnagel<sup>22</sup><sub>Nov. 27, '89</sub> putting it exophthalmus, struma, tachycardia; while Jaccoud<sup>1</sup><sub>Feb. 22</sub> says it is usually palpitation, dilatation of arteries, enlargement of thyroid, exophthalmus. Jaundice is a symptom of profound gravity. Jaccoud thinks that an abnormal amount of blood in the cilio-spinal region (where the palpebral and ciliary nerves arise) explains the ocular manifestations.

Kast and Wilbrand<sup>75</sup><sub>July 15</sub> have observed, in about 20 cases of exophthalmic goitre, a limitation of the field of vision, which fluctuates with the variations other symptoms show. J. R. Reynolds<sup>6</sup><sub>May 17</sub> reports 49 cases,—48 females, 1 male. He finds the influence of age practically *nil*. Exophthalmus absent in 6 cases; goitre absent once, though its degree varied widely. Nervous disturbances were invariably present. There is often a condition of the mind called by the writer a "chorea of ideas," in which the patient tries to think one thing and thinks another.

Louise Fiske-Bryson<sup>1</sup><sub>Dec. 14, '89</sub> has discovered a new and appar-

ently important symptom in Graves's disease. In classifying symptoms in a series of cases (number not given), the writer lays stress on diminished chest expansion (found in all cases observed). In severe cases the chest expansion was  $\frac{1}{2}$  inch, sometimes less. Chest expansion of 1 inch or more is considered by Fiske-Bryson sufficient grounds for favorable prognosis. G. M. Hammond,<sup>1 Jan. 25</sup> mentions 8 cases in which this symptom was observed by him, 1 fatal, in which the expansion was less than  $\frac{1}{2}$  inch.

H. W. G. Mackenzie,<sup>6 Sept. 13</sup> in a lecture on this disease, speaks of the pigmentary changes in the skin as a symptom. He has observed it in 5 patients, and refers to several other writers who have observed it. The color is a more or less dark brown; the parts affected, the face, neck, sides of chest, abdomen, lumbar region, axillæ, and flexures of arms and thighs.

*Relationship.*—A case reported by Joffroy<sup>3 Apr. 13</sup> seems to throw light on the relations between Graves's disease and certain psychical troubles. A patient had had an hysterical hallucination for two years following a fright. This had disappeared for several years, when it was revived by an attack of exophthalmic goitre, and with it were developed several other hallucinations. The cerebral trouble was of hysterical origin, but developed by exophthalmic goitre.

Ballet<sup>212 July</sup> reports a case of exophthalmic goitre with multiple paralysis of motor bulbar nerves and marked hysteria. The patient also had delusion of persecution following hallucinations of sight, hearing, and smell. Hysteria and its hallucinations form the material out of which ideas of persecution are created in exophthalmic goitre.

J. Boedecker<sup>13 Apr.</sup> reports 4 cases in all of which mental disease, characterized by hallucinations, came on a long time after the appearance of exophthalmic goitre (1 after it had almost disappeared).

*Prognosis.*—Nothnagel<sup>22 Nov. 27, '89</sup> says the prognosis is comparatively favorable, as far as life is concerned. There are cases, however, with fatal termination from heart-failure. According to Kahler,<sup>57 Mar. 10</sup> it is more unfavorable in men than in women.

H. W. G. Mackenzie<sup>6 Sept. 20</sup> says, when the disease is incomplete it is rarely fatal, but when well marked it is dangerous to life. Hale White's and Mackenzie's cases show 10 deaths out of 18 cases. Of 8 fatal cases 3 were from intercurrent diseases and 5

seemed directly due to exophthalmic goitre. Death has occurred early in the first year or after the disease has lasted three to eight years.

*Treatment.*—The opinion of many of the writers is that digitalis is not borne by a number of the patients, while some condemn its use in every case.

Ferguson<sup>1</sup><sub>Nov.8</sub> recommends, in its place, tincture of strophanthus in doses of 8 to 10 drops, increased, if necessary, to 15, 20, or even 25 drops, three times daily.

Hammond<sup>1</sup><sub>Jan.25</sub> has used carbazotate of ammonium with good results in 3 cases, following Combes's directions, *i.e.*, 1 grain (0.065 gramme), in pill, t.i.d., for one week; second week, 2 grains (0.13 gramme) t.i.d., and third week, 3 grains (0.19 gramme) t.i.d., if it can be borne. The physiological effects of the drug are decided. They are a slight saffron color of skin and conjunctivæ at the end of the first week, deepening if the drug is continued; peculiarly unpleasant odor from the body (like dirty feet); following these, severe gastric disturbances. It is rarely possible to take the drug longer than three weeks, but the effects on the heart, respiration, and exophthalmia are undoubted during its use.

A case is reported by Boaz<sup>856</sup><sub>Sept.</sub> from the use of carbazotate of ammonium in 2-grain (0.13 gramme), gradually increased to 4-grain (0.26 gramme) doses, three times daily, alternated weekly for a year with tincture of strophanthus (10 drops, gradually increased to 30 drops, three times daily).

J. L. Corning<sup>1</sup><sub>Sept.13</sub> recommends a warm bath for three-quarters of an hour or more daily, supported by elastic pressure above or below the knees (to compress the veins), when the derivative action of the bath is insufficient, styptic collodion on the thyroid, enforced by elastic truss, daily galvanism of thyroid, employing the positive pole on the thyroid (with an electrode of potters' clay moistened with iodine enveloping the thyroid), the negative electrode, a large flat sponge, being in the back of the neck.

Stierlin<sup>169</sup><sub>Dec., '99</sub> reports a case of exophthalmic goitre in which, through extirpation of the goitre, the abnormal activity of the heart was brought back to normal. Other symptoms improved.

Kümmell<sup>69</sup><sub>May15</sub> has removed the thyroid in a case of exophthalmic goitre, leaving a part of the left lobe, with favorable results.

## MYXŒDEMA AND CACHEXIA STRUMIPRIVA.

*Pathology.*—Bircher<sup>336</sup><sub>June 23</sub> reports 5 cases which support the theory that the function of the thyroid is to prevent the accumulation of mucin in the tissues. In 3 cases the symptoms of myxœdema, which had come on after operation, entirely disappeared as the remnant of the thyroid developed. One succumbed from rapid development of cerebral symptoms. Another was a specially-interesting case of myxœdema in a cretin. The myxœdema twice yielded to the transplantation of a piece of thyroid into the abdominal cavity from another patient. Both times the thyroid tissue was finally absorbed and the symptoms returned (the second time after several months' absence).

*Symptoms.*—Kraepelin<sup>75</sup><sub>Feb. 1</sub> reports a case of myxœdema with exceptional symptoms. These were anxiety (with loss of sleep and appetite), extraordinary need of warmth, and tremor (observed only once before). He calls attention to the fact that these symptoms also occur in cachexia thyreopriva, and in exophthalmic goitre.

At least 10 per cent. of the cases collected by Ord<sup>59</sup><sub>Sept. 13</sub> occurred in men. Several cases seemed to be hereditary. A certain number were preceded by hypertrophy of the thyroid, which disappeared later.

*Treatment.*—Bircher<sup>336</sup><sub>June 23</sub> thinks it might be desirable to recommend a patient, at the first appearances of myxœdema, to drink the waters in a goitrous region.

Victor Horsley,<sup>2</sup><sub>Feb. 3</sub> in an article on "A Possible Means of Arresting the Progress of Myxœdema, Cachexia Thyreopriva, and Allied Diseases," quotes Eiselsberg's account of his experiments. The latter extirpated the left thyroid lobe in 9 animals, and quickly transplanted it into a fold of the mesentery or into the subperitoneal tissue. At dates varying up to three weeks the other half was removed from the neck. Of the 9 animals, 8 died with typical symptoms of cachexia thyreopriva. Post-mortem examinations showed that the transplanted glands had not healed *in situ* or were degenerated. The ninth animal, however, survived and increased in weight. It was killed, and the transplanted gland found organized and vascularized. In 4 more cases the transplanted gland was placed between the fascia and the peritoneum. Three of these animals died, the graft necrosing. In the fourth case the animal was perfectly well three and a half months after

the operation, and on post-mortem the gland was found highly vascularized and in functional activity. These results show conclusively that the transplanted gland, if it can be got to live, will provide for the needs of the body as well as if it were in the neck. This procedure Horsley thinks justifiable in the above diseases in the human being. The best thyroid for this purpose would be that of the anthropoid ape, but this is, of course, expensive and difficult to obtain; therefore a sheep's thyroid is suggested, being much like the human organ. Horsley<sup>2</sup><sub>July 26</sub> has attempted transplantation in 5 cases. In 3 he put the gland loose in the abdomen. One patient is greatly improved since the operation. Results are not yet published.

Lannelongue<sup>14</sup><sub>Mar. 9</sub> reports the transplantation of two-thirds of a lobe of the thyroid of a sheep under the right breast of a girl of 14, who apparently had no thyroid. The operation is too recent to judge of the result.

Bettencourt and Serrona report a case of myxœdema of several years' standing, with apparent absence of the thyroid, in which the symptoms were immediately and markedly improved after the transplantation of a portion of a sheep's thyroid under the skin of the chest. This improvement, from its rapidity, was probably due to absorption of the fluid from the sheep's thyroid.

Merklen<sup>100</sup><sub>Nov. 18</sub> reports a similar case, with rapid disappearance of some symptoms and improvement of others after the transplantation.

#### MYXŒDEMATOUS IDIOCY.

According to Bourneville,<sup>73</sup><sub>Aug. 16</sub> the principal appearances characteristic of this disease (also called cachexia pachydermia) are a short, thick neck; prominent belly; short, thick limbs; cyanosis of hands and feet, undeveloped genital organs, subnormal temperature, dry skin, rough voice, peculiar gait. This disease is due to congenital absence of the thyroid or perhaps at times to a lesion of the gland during the first years of life.

*Causation.*—Impressions on the mother during pregnancy occurred in 4 cases out of 25; tuberculosis in the family in 5 cases, cancer in 4; intermittent fever in 3, neurotic family history in the majority. There were 15 females and 10 males. During lactation the symptoms often escape the notice of the parents and are not marked until after some injury or illness, but a practiced eye can see them in the first year, if not in the first month, of life.

*Symptoms.*—Idiotism, inanition, low forehead, large occiput, persistent anterior fontanelle, coarse hair, broad nose; dull, apathetic face; large mouth, thick lips; large tongue, generally protruding; irregular, carious teeth.

If, in the myxœdema of adults, one does not observe the marked physical and mental symptoms above mentioned, it is because the pathological lesion occurs when body and mind are developed. Diagnosis, from cretinism. Cretins always descend from goitrous patients; myxœdematous idiots, never. Very few of the former present osseous degeneration, which is almost the rule in the latter.

#### THE THYROID IN IDIOTS.

Mordret<sup>3</sup><sub>Aug. 10</sub> has examined by palpation the thyroid in 151 idiots. Of 36 weak-minded, only 11 per cent. showed the thyroid actually atrophied; of 40 imbeciles, 22.5 per cent.; of 38 idiots, 26.3 per cent.; of 37 complete idiots, 50.5 per cent. Mordret thinks this shows a genuine relation between thyroid atrophy and lowered intelligence. Sollier thinks that it is very difficult, if not impossible, to judge of the state of the thyroid by palpation; nor is the possible variation of the thyroid in a normal state or according to the age of the patient known.

#### CRETINISM.

A. Hanau<sup>2</sup><sub>Oct. 4</sub> says that Bircher does not agree with Horsley that cretinism is due to some disturbance of function in the thyroid, but considers cretinism a distinct affection, which he would refer to the same miasm as endemic goitre. He believes it to be a general disease *ab initio*. Hanau finds, from the examination of three specimens of thyroid gland from adult cretins, in gross appearances of texture, nothing especially abnormal. Microscopically, he finds a deficiency of gland-tissue and excess of connective tissue, and adventitia of the arteries thickened. In one of the less altered glands there were small foci filled with leucocytes. The most perfect alveoli are small and have only a single layer of epithelium; the others show less and less epithelium, some showing none and being filled with leucocytes or colloid masses, or cellular *débris*. There was never wanting some gland-tissue capable of performing its function. This condition of the thyroid lends strong support to the theory of the dependence of cretinism upon disordered function of the thyroid.



# INEBRIETY, MORPHINISM, AND KINDRED DISEASES.

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## ALCOHOLIC INEBRIETY.

THE literature of the year on this subject contains very little that warrants more than a passing notice. There are reiterations of views which have been presented year after year, but very few new facts or new arguments. Many of the articles on the effects of alcohol in inebriety and on the temperance question are good literary essays, embellished with poetry, classical quotations, and euphonious language, but appeal to the emotions rather than to the intellect.

Clouston,<sup>36</sup><sub>Dec., '89</sub> in a sixty-page article, treats of "diseased cravings and paralyzed control, dipsomania, morphinomania, chloralism, and cocainism." It is an able article, replete with facts and interesting conclusions, but written in a diffuse style, which cannot be briefly epitomized.

On the general subject of inebriety as a disease there are articles by Willis,<sup>26</sup><sub>Feb.</sub> Brownson,<sup>138</sup><sub>Dec.</sub> Crothers<sup>700</sup><sub>Aug. 16</sub> (an interesting historical sketch), Axtelle,<sup>61</sup><sub>Oct. 4</sub> Mitchell,<sup>19</sup><sub>Dec., 14, '89</sub> (opposed to the theory of inebriety), Wright<sup>98</sup><sub>July</sub> ("Influence of Drunkenness on Morality"<sup>121</sup><sub>May</sub>; "Alcohol: its Impressions upon the Mental Powers and upon Human Conduct"<sup>760</sup><sub>Oct. 4</sub>; "Drunkenness: What is it?"<sup>61</sup><sub>June 21</sub>; "Drunkenness and General Paralysis"<sup>29</sup><sub>Aug.</sub>), and anonymous articles on "Intemperance and Insanity,"<sup>234</sup><sub>June</sub> on "Medicine and the Alcohol Controversy,"<sup>38</sup><sub>Nov., '89</sub> on "Liquor Legislation and the Medical Profession." Crothers<sup>234</sup><sub>June</sub> writes on "Alcoholic Heredity in Diseases of Children," and Hughes<sup>98</sup><sub>Oct.</sub> on the "Psychopathic Sequences of Hereditary Alcoholic Entailment." McCarthy,<sup>1000</sup> of Australia, in a short paper on inebriety, while asserting that the inebriate labors under "moral insanity," thus making inebriety a form of insanity, in the same paragraph describes the sad scenes that follow, until, he says, "he dies or becomes insane." The prognosis of inebriety is made to turn on a

question of religious belief; for he says, "I think it very improbable that an inebriate who does not believe in a future judgment can be cured." On legislation and the asylum management of inebriates there are several articles: Crothers<sup>242</sup><sub>Sept.</sub> makes a plea for more asylums; Nicholson<sup>1073</sup> is in favor of State inebriate-asylums; Kahlbaum<sup>22</sup><sub>Sept. 24</sub> favors the isolation of inebriates in communities under State management, where alcohol in all its forms could be excluded, but occupation carried on in the way of agriculture or manufacturing. Trekowsky discusses the question of inebriate-asylums and work-houses for drunkards from an Austrian point of view. The Austrian government has recently decided against the erection of State inebriate-asylums.

Crispi<sup>131</sup><sub>Dec., '89</sub> has an able article on the ineffectual operation of the laws relating to drunkenness and inebriety in Great Britain. He states that in Glasgow there are 10,000 police commitments of women every year for drunkenness. About 40 per cent. of these Scottish jail-birds have had from 11 to 800 previous corrections recorded against them. The mean period of imprisonment is seven days. "What does this mean?" he asks. "Simply that, so far from cure or reformation or even deterrence, these short sentences enable the prisoner to recover from the exhaustion of the last drinking bout, and send him forth recruited, invigorated, and fit to re-commence his vicious indulgence, confirming rather than curing the inebriate habit." Again, he says, respecting punishment of drunkenness: "The drunkard can or can not control his appetite. If he can, and will not, he is vicious, and should be punished. . . . If a drunkard knew that every bit of self-indulgence would be followed by a sound flogging, outbreaks would be rare. If the drunkard cannot restrain himself, then he is a lunatic and a menace to society, and he should be treated accordingly." He proposes certain legal measures to facilitate the incarceration of inebriates. Field,<sup>1</sup><sub>June 14</sub> in an interesting paper on inebriety, calls attention to the inefficiency of the laws relating to the suppression of drunkenness in New York. He says: "The records of the work-house show that it has no effect to deter men from drinking, and one woman was sentenced twenty-eight times in twenty-five months. Dana<sup>1</sup><sub>June 14</sub> gives a graphic picture of "Alcoholism as it Occurs in the Bellevue Hospital Cells." The following statistics are given in his paper: The number of persons arrested for in-

toxication in New York City every year is about 30,000; most of these are fined or sent to the Island, or both. When medical care is needed they are sent to the "Bellevue Cells." The number treated there was 3428 in 1889, of whom nearly one-third were women. The period from the thirtieth to the fortieth year includes the most. It is not the day-laborers, but the mechanics, artisans, and small tradesmen that furnish the largest proportion; while the women are, for the most part, married, or widows, so called. Drivers, waiters, painters, and liquor-dealers supply a very considerable quota, but it is the in-door workman who is oftenest the victim. Fully one-half the persons are of Irish birth, while a little over a third are native-born. The preponderance of Irish parentage, even in the native-born, however, is very great. In all arrests for violation of the law, in 85,049 persons 52 per cent. were of foreign birth and 44 per cent. of Irish birth. The Hebrew is rarely seen in the "cells." Nearly 5 per cent. of the patients treated in the "cells" die, and a still larger number (185 among 3000) are transferred to the hospital-wards or to the insane-pavilion. Of 3000 patients, 40 became insane or were so when they entered. Mason<sup>61</sup><sub>June 7</sub> presents statistics based on a study of 4663 cases of alcoholic inebriety, treated at the Inebriate Home, Fort Hamilton, N. Y. The nativity of these cases was as follows: United States, 3186; Ireland, 826; England, 203; Scotland, 77; British Possessions, 73; Germany, 109; other nationalities, 44; not recorded, 145. The results of treatment show 43 per cent. "doing well;" that is to say, "restored to society, and to their business and social relations." Concerning occupation, the greater part were from mercantile or commercial life. About one-eighth belonged to the professions: physicians, 115; lawyers, 111; clergymen, 10. Cosgrove,<sup>16</sup><sub>July</sub> in a paper on "Alcohol and Longevity," reviews the English statistics, depending chiefly on insurance statistics, which he interprets as favorable to the view that total abstainers have longer lives than non-abstainers.

Henri de Parville<sup>82</sup><sub>July 12</sub> concludes, from French police statistics, that the number of cases of alcoholic insanity has doubled in fifteen years.

From the clinical side of alcoholism there are articles with reports of cases by Gill<sup>187</sup><sub>July</sub> ("Toxic Insanity, Especially in Relation to Chronic Alcoholism"), Kalisher<sup>252</sup><sub>Dec. 1, '90</sub> (on the "Psychoses of

Chronic Alcoholism"), Leppmann<sup>75</sup><sub>Oct.1</sub> (on "Psychical Degeneration in Inebriates"), Kaempfer<sup>116</sup><sub>Sept.</sub> (on "Exanthematous Effects from Alcohol"), Troitzkij<sup>867</sup><sub>v.15,p.28</sub> (a case of "Alcoholic Automatism"), and a well-written article on "Alcoholic Hallucination," by F. W. Mann. Meynent<sup>81</sup><sub>Jan.18</sub> expresses his views on delirium tremens, seeking to explain the peculiar illusions and hallucinations which occur. Demme,<sup>2</sup><sub>Sept.27</sub> in a hospital for children, selected two groups of ten families each. One group of 57 was affected, more or less, by alcohol; the other of 61 was unaffected, or slightly so. Of the first group 20 had inebriate fathers, the mothers and grandparents being moderate drinkers. Only 45 per cent. of these had healthy constitutions; 31 had inebriate fathers and grandfathers, but temperate mothers and grandmothers; only 2 of these, or a little over 6 per cent., were healthy. Of the 61 children belonging to temperate families, 82 per cent. were in good health.

Concerning the action of alcohol on the human system, there are articles by Johnson,<sup>26</sup><sub>May</sub> Henry,<sup>82</sup><sub>Sept.27</sub> Atchison,<sup>74</sup><sub>Oct.</sub> Noer,<sup>82</sup><sub>Aug.16</sub> Chénery,<sup>61</sup><sub>Aug.2</sub> Bonavia,<sup>26</sup><sub>Nov.</sub> and Richardson.<sup>53</sup><sub>Nov.8</sub> Blumenau<sup>1069</sup><sub>Nov.17,p.60</sub><sup>109</sup><sub>Oct.</sub> has carried out a long course of elaborate experiments on five young men (four soldiers and a hospital-waiter), aged from 22 to 24. Alcoholism was used in the shape of a 25- and 50- (vol.) per-cent. solution, of which 100 cubic centimetres ( $3\frac{2}{5}$  fluidounces) were taken ten or twenty minutes before the patient's dinner (consisting of soup, cutlet, and bread). The following are the main results arrived at by the author: 1. During the first three hours after the ingestion, the gastric digestion is markedly retarded, which is dependent upon diminished digestive power of the gastric juice; in other words, upon a decrease in the proportion of hydrochloric acid present therein. 2. The diminution is especially pronounced in persons non-habituated to the use of alcohol. 3. Stronger solutions of alcohol act more energetically than weaker ones. 4. During the fourth, fifth, and sixth hour after the meal, the digestion becomes considerably more active, the proportion of hydrochloric acid markedly rising. 5. Under the influence of alcohol, the secretion of the gastric juice becomes more profuse and lasts longer than under normal conditions. 6. The motor and absorptive powers of the stomach, however, are markedly depressed, the decrease being directly proportionate to the strength of alcoholic solutions ingested. 7. Alcohol distinctly retards the passage of food from the stomach

into the duodenum. 8. On the whole, alcohol manifests a decidedly unfavorable influence on the course of normal gastric digestion. Even when ingested in relatively small quantities, the substance tends to impair all gastric functions. 9. Hence, a habitual use of alcohol by healthy people cannot possibly be approved of from a physiological stand-point.

Spanik<sup>22</sup><sub>Oct.15</sub> has been able to produce peripheral degenerative neuritis in rabbits by the daily administration of increasing quantities of alcohol, given by the mouth. Chronic gastric hæmorrhagic catarrh was another effect observed. Jackimon,<sup>748</sup><sub>v.7.p.72</sub> in his experiments on dogs, found that the lesions produced by the ingestion of alcohol over a period of several months, and effecting exhaustion and loss of weight, consisted exclusively of degenerative changes (atrophy and vacuolization) in the nerve-cells of the gray matter of the cord, and, to a slight extent, of the cerebral cortex. The white matter and peripheral nerves remained normal.

Combemale and François<sup>6</sup><sub>Aug.10</sub> found that plumbism, induced in animals by feeding them with carbonate of lead, was hastened, to a marked degree, by the administration of large quantities of alcohol. Letulle<sup>3</sup><sub>Oct.22</sub> reports a case of varicose veins of the œsophagus in a chronic alcoholic subject who succumbed to the effects of frequent and severe hæmatemesis. There were no hepatic lesions, but sclerosis of the spleen and thrombosis and endophlebitis of the mesenteric veins existed. He attributes the varices to the direct effect of alcohol on the intima of the veins. Pilliet,<sup>164</sup><sub>Apr.3</sub> in describing alcoholic hepatitis, maintains that the lesions found in the acute form are like those observed in infectious, suppurative hepatitis, showing the identity of effects between infectious and toxic processes.

*Treatment.*—Ladame<sup>57</sup><sub>May 25</sub> reports 3 cases of dipsomania treated by hypnotic suggestion, with what he regards as encouraging results, in view of the difficulty in curing such cases. Two of the 3 cases relapsed some time after treatment was discontinued. Respecting medicinal treatment, strychnia, in large doses, continues to be praised for all forms of alcoholism. Girdon<sup>337</sup><sub>Apr.</sub> recommends paraldehyde as the best hypnotic during the withdrawal of alcohol in cases of inebriety. Monin<sup>108</sup> has used turpentine in full doses by the mouth in a case of acute alcoholic cirrhosis, and recommends its further trial. A writer<sup>9</sup><sub>Dec.7,79</sub> recommends nitro-muriatic acid in from 6- to 10- drop doses in a glass of water, every four

hours, to relieve the effects of an alcoholic debauch. Moore<sup>112</sup><sub>Jan.</sub> describes the treatment of acute alcoholic intoxication at St. Mary's Hospital, Philadelphia. A drachm (4 grammes) dose of fluid extract of ipecac, with a teaspoonful of whisky, is given as soon as the patient enters the hospital. After free emesis the patient frequently sleeps without further medication.

#### THE ETHER-DRINKING HABIT.

Hart's address<sup>2</sup><sub>Oct. 18; Nov.</sub> on this peculiar and novel form of inebriety warrants our reproducing a considerable portion of his article. Ether-drinking appears to be chiefly confined to a few centres of population in the North of Ireland, and its origin dates back at least to the year 1842. Some consider it an indirect effect of the teetotal movement; others maintain that the watchfulness of inland-revenue officers has driven the people to ether as the best substitute for poteen. Hart thinks, however, that an act which allowed spirit of wine to be used duty-free in the arts and manufactures, provided it was rendered unfit for use as a beverage by the addition of methylated spirit, led to the production of a cheap "methylated ether." "It is to the introduction of this cheap ether, which can be retailed at a nominal price, and to the simultaneous activity in hunting down illicit stills, that the prevalence of ether-drinking may be traced." Large quantities of ether go to the ether-drinking districts. One dealer sent over 5000 pounds to this part of the country within six months. No other intoxicating drink can compare with it in cheapness. Its retail price is about 1*l.* per 2 drachms, or 1½*l.* for 1½ drachms. It is, therefore, possible to get rapidly intoxicated for a few pence. In small, poor grocery-shops ether is sold without restriction. It is hawked about by beggar-women and sold to the peasantry for eggs and farm produce, and it is said to be sometimes sold over the counter by medical men who keep "open surgeries." Concerning the method of drinking, the dose, prevalence of the habit, and its effects, he quotes from some of his informants as follows: "H. N. Draper says: 'The usual quantity taken at one time is from 2 to 4 drachms (8 to 15 grammes), and this dose is repeated twice, thrice, or even four and six times daily. It is taken unmixed with water; indeed, its very slight solubility in that fluid would make this a useless precaution; but the usual practice is to take first a

mouthful of water, then the dose of ether, and again a mouthful of water.' Richardson describes the process as slightly more elaborate. According to him, 'the drinker first washes out his mouth with water "to cool it;" next he swallows a little water to cool his throat; then he tosses down the glass of ether; finally, he closes in with another draught of water to keep the ether from rising, or, in other words, to cool the stomach.' The ritual of ether-drinking is, however, not always the same. C. H. P. D. Graves, of Cookstown, informs me: 'It is always the methylated spirit that is drunk, the usual quantity being about 2 drachms (8 grammes) in water, but an experienced drinker can, by holding his nose, consume a large quantity undiluted.' Another Cookstown doctor informs me that the ether 'is commonly sold in "draughts;" that is, quantities rather less than half a spirit-glassful. This is generally drunk neatly at one gulp, and followed by a mouthful of water in the case of the novice, but the *habitué* scorns the water. This dose is repeated in varying frequency, according to the desire or habits of the individual. I have known about six or seven "draughts" to be taken by one person in about an hour, but have often heard wonderful tales of some who consider about a pint not an extraordinary allowance for one individual during an ether debauch.' With regard to the amount sufficient to produce intoxication, the same gentleman says: 'The dose varies much according to constitution, age, and addiction to the habit. I have heard some boast that they could drink a dozen to twenty draughts in an evening, but a quarter of this amount would more than intoxicate an adult unused to the drug. In fact, one draught—less than half a wineglassful—will produce ether-intoxication in any one not accustomed to it.'

"On the other hand, Hetherington, of the District Lunatic Asylum, Londonderry, says: 'Two drachms (8 grammes) are usually taken, which costs about 1*l.*, and three or four of these intoxicate, but old hands can take much larger quantities.' Nevin, of Ballymoney, says that as much as 10 ounces (320 grammes) may be habitually taken in the course of the day; he has heard of several ounces being taken at one dose. J. W. Watson, of Limavady, has heard men boast that they could drink a 'noggin' (equal to 5 ounces—160 grammes) at a draught, but has never seen this feat actually performed. The largest quantity he has

seen a man drink has been one ounce (32 grammes). These statements show that, as might *à priori* have been expected, the quantity of ether that can be drunk with impunity and the dose sufficient to produce intoxication vary, just as in the case of alcoholic stimulants and drugs of all kinds, according to individual idiosyncrasy, induced tolerance, physical condition, etc. The special danger of ether, as compared with other intoxicants, lies in the fact that, as the immediate effect passes off very quickly and leaves behind little or no discomfort in the shape of nausea, headache, dry mouth, etc., what Norman Kerr calls the 'drama' of intoxication can be repeated several times in the day. As Graves, of Cookstown says, 'an ether-drinker will get drunk half a dozen times a day.' This, of course, is considered one of the chief advantages of ether by its victims and votaries.

"The Rev. Dr. Carter, Rector of Cookstown, has publicly stated that 'more than 2 tons of ether are openly passed along the railways each year into this district, while a larger quantity is conveyed secretly by rail or by private conveyances into the localities mentioned. . . . In two small villages I know of two traders who sell over 500 gallons each annually. . . . The habit grips whole families, and becomes hereditary and spreads with rapidity. Since I began my inquiries and called attention to the subject it has seized a new district.' Again, the same authority says: 'It is given by traders to school-children and messengers, and in some towns and localities causes on Sundays the largest part of intoxication.'

"C. H. P. D. Graves, of Cookstown, writes: 'Being Medical Dispensary Officer of the Cookstown District, I am brought into close contact with all classes. I find ether-drinking more prevalent among the very poor than among the well-to-do, I suppose on account of cheapness; but even if a person who is comfortably off begins drinking ether, he is sure to reduce himself to poverty, the habit being as pernicious as opium-eating. On Saturday evenings (market-day) the atmosphere along the roads is simply impregnated with the fumes of ether, so many of the market-people drink it.' Another informant, speaking of South Derry, says that the doctor to whom he was apprenticed, some twenty years ago, told him that 'the practice of drinking ether in the district prevailed to such an extent that there were scattered over



the country what were known as ether-houses, where a cheap and impure article was sold.'

"A practitioner at Cookstown writes: 'I have noticed its odor in the breath of hundreds of people. I know and have known, perhaps, well on to a hundred people who take it pretty freely. You would be surprised to know how many comparatively respectable people take it, and do not seem at all ashamed to do so. Of course, these generally say they take it for "wind in the stomach," "pain in the head," "giddiness," etc., using it as a domestic medicine, and often keeping a considerable supply in their homes. It is often drunk to intoxication at wakes and dances, especially in the more backward and mountainous districts.' Bernard also tells me that, for the last two years, ether-drinking has been greatly on the increase in the southern portion of the county of Londonderry 'among all denominations belonging especially to the small farming and laboring classes.'

"The immediate effects of drinking ether are similar to those produced by alcohol, but everything takes place more rapidly; the stages of excitement, mental confusion, loss of muscular control, and loss of consciousness follow each other so quickly that they cannot be clearly separated from each other. It is only the 'immoderate' ether-drinkers who drink themselves into stupor; many are content not to go beyond the stage of exhilaration, when they become very talkative and laugh hysterically. The effect wears off almost as speedily as it comes on. What De Quincey said of the terrible attractions of alcohol is still more true of ether. The endeavor to renew the state of exaltation induced by the first dose drives the drinker to take more and more of the stimulant, till it becomes a tyrannical abuse, leading to effects precisely opposite to those first arrived at.

"That ether is frequently drunk to the extent of inducing intoxication all my witnesses are agreed. Thus, the Cookstown authority whom I have so freely quoted says: 'It is often drunk to intoxication at wakes and dances, especially in the more backward and mountainous districts. Its effects are very rapidly produced and the stage of excitement very marked. Those under its influence will shout, dance, laugh, and act like maniacs, and if the dose has been heavy may fall down writhing and foaming at the mouth. They recover generally soon, and feel low, weak,

and depressed, and often then will renew the dose, for which they have generally a strong craving. A smaller dose produces exhilaration and a peculiar feeling of *lightness*, the person imagining he or she could jump up and fly.'

"The same close observer thus describes the symptoms often produced by ether-drinking: 'Profuse salivation often follows the drinking of ether, and then usually rather violent eructations; the face becomes flushed, and may become livid if large quantities are taken; afterward pallor, weakness, and burning pain at the epigastrium are generally present. Frenzy, maniacal excitement, and ultimately stupor intervene when the dose is large and taken within a short space of time.'

"J. W. Watson writes: 'It is usually drunk for the purpose of producing intoxication, people drinking it and "treating" each other as they do with whisky in other parts of Ireland or beer in England. The intoxication comes on quickly and passes off quickly. All ether-drinkers agree that it is a pleasurable form of intoxication, and others can see it is a very violent form of intoxication. However, the most violent condition is produced when whisky and ether are both taken.' Watson and others say that ether-drinkers are very quarrelsome in their cups, the intoxication being decidedly of the 'fighting' type.

"With regard to the more remote effects of ether there is not much to be said. Very little appears to be known by pathologists of any injurious effect it may have on the tissues.

"I have made special inquiries as to its effect on the health, and, so far as 'moderate' drinkers are concerned, there does not seem to be any evidence that the habit produces anything worse than chronic gastritis and dyspepsia. With regard to the worst cases, however, a careful observer writes: 'In ether-drinkers who have long followed the habit I have seen general debility, great nervous prostration, accompanied by tremors (muscles of neck and forearm mainly affected), indigestion, irregular action of heart, subacute gastritis, a peculiar, white, sallow complexion, and in some cases (personally observed) a peculiar, livid, cyanotic face.' Walter Bernard notes the following among the injurious effects on health which ether-drinking gives rise to: 'Absence of subcutaneous fat, muscular wasting, feeble circulation, pale lemon- and brown-colored skin, reflexes exaggerated, especially knee-jerks.'

One terrible effect of ether-drinking is the profound degeneration of the moral character, which it often induces; the victims fall into a kind of chronic hysterical condition, lose all self-respect, and, as in the case of nearly all who abuse narcotics, will lie and even steal to procure their favorite stimulant.

"Touching the tendency of ether-drinking to produce insanity my informants are divided in opinion. Hetherington, of the Londonderry District Asylum, writes: 'I cannot connect cases of insanity directly with its use, though many of my patients have been addicted to the habit. The districts named have always had a large proportion of insane, irrespective of ether-drinking.' Walter Bernard, visiting and consulting physician to the same asylum, thinks that ether, while not *per se* a cause of insanity, calls into action any dormant tendency to insanity that may exist. My Cookstown authority has himself attended cases in which he considered 'the insanity certainly to some extent dependent, both as an exciting and a predisposing cause, on the ether habit.' Other correspondents deny that there is any connection, other than accidental, between ether-drinking and madness. The habit seems to lead to crime only through the violence and pugnacity which have already been alluded to as characteristic features of the first stage of ether-intoxication. With regard to the effect of ether-drinking on the duration of life very little positive evidence is forthcoming."

Hart looks upon the evil as serious, as in danger of spreading, and advocates stamping it out by laws which will prohibit the sale of ether in small quantities.

#### MORPHINISM.

Three publications during the year on this subject have elicited favorable comment, namely, Pinchon's<sup>1084</sup> *Le Morphinisme*, a complete and conscientious study of the physical and mental troubles of morphinomaniacs, and of their treatment, capacity, and legal status; Oscar Jennings's<sup>1085</sup> work on treatment; and Reginier's<sup>1086</sup> critical essay on the disease in its various forms. The latter author says that simple morphinism rarely causes a state of mental alienation sufficient to allow a plea of irresponsibility. It never produces irresistible impulse, but in the more profound disturbance known as morphinomania irresistible impulse and other pronounced mental disturbances may occur, entailing, frequently, serious

medico-legal consequences. These states may also result from the sudden withdrawal or reduction of the drug. There are reviews of the general subject by Foot,<sup>16</sup><sub>Dec., '99</sub> Woolly,<sup>271</sup><sub>May</sub> and Watson.<sup>61</sup><sub>Apr. 10</sub> Ball<sup>14</sup><sub>Oct. 12</sub> delivered two interesting clinical lectures on morphinomania and the symptoms of abstinence. Among the latter he calls special attention to the pollutions and erotomania which may supervene in both male and female patients. Charcot<sup>24</sup><sub>Sept. 7</sub> gives in a clinical lecture the history of a patient with epilepsy, hysteria, and morphinomania as independent affections. Noble<sup>43</sup><sub>Aug.</sub> reports a case under the heading "Perplexing Symptoms Arising During Treatment of a Case of Opium Habit: What Name shall be Given to the Group of Symptoms?" The phenomena which he describes are evidently those due to the rapid withdrawal of the drug, and are now universally termed the "symptoms of abstinence" (from *Abstinenz Symptome*, of the German).

Edson<sup>186</sup><sub>Oct.</sub> reports an unfortunate case of the morphia habit induced by his continuing hypodermatic injections too long during an acute illness. He offers it as a warning to other physicians. Mattison<sup>760</sup><sub>Nov. 29</sub> reports 2 cases of "triple narcotic addiction" (morphia, alcohol, cocaine). One patient had been taking from 1 to 30 grains (0.07 to 2 grammes) of morphia and 10 to 60 grains (0.65 to 4 grammes) of cocaine hypodermatically, and 12 to 16 ounces (384 to 512 grammes) of rum a day; the other, 10 to 60 grains (0.65 to 4 grammes) of morphia, 35 grains (2.27 grammes) of cocaine, and 6 ounces (192 grammes) of rum. In the first case under treatment a year of freedom resulted, then a relapse, followed by a second recovery under treatment. In the second case the habit was broken in a month, but Mattison admits that it is too soon to feel that relapses may not occur with these patients. Voisin<sup>3</sup><sub>May 2</sub> relates 2 cases of morphinomania in hysterical subjects in which a cure was obtained by the sudden withdrawal of the drug, but the interesting point concerning them is that the attacks of hysteria which had been in abeyance during the continuance of the habit (5 years in one case and eighteen months in the other) immediately revived on withdrawal of the morphia, with all the physical and psychological stigmata of this neurosis.

Huchard<sup>3</sup><sub>May 14</sub> concludes, from three observations of uræmia associated with the morphia habit, in which lesions of the large white kidney were found at the autopsy, that permanent albumi-

nuria may develop under the prolonged abuse of morphia. His cases are supported by other clinical and experimental proof. He considers the albuminuria due to the lowered arterial tension which morphia produces, as found in the large white kidney. On the other hand, in interstitial nephritis, where the arterial tension is high, morphia is well tolerated on account of its vaso-dilator action. Zoth<sup>844</sup><sub>Nov. 20</sub> opposes Marmé's theory that the symptoms of morphia abstinence are due to oxydemorphine. He found this substance insoluble in the fluids of the body, and its hypodermatic administration to dogs failed to produce the abstinence phenomena. Its presence in the urine, as maintained by Marmé, though confirmed by Lauval, has been denied by Donath.

Two writers<sup>235</sup><sub>Dec., '89</sub> condemn, in the strongest terms, Ayres's opinion<sup>1087</sup><sub>'88</sub> (ANNUAL, 1889, D-20) concerning the harmlessness of opium-smoking among the Chinese. They regard the habit as a serious evil in China. This view is confirmed by our corresponding editor in Foochow, China, H. T. Whitney, who says that the universal testimony of physicians in China, qualified to judge, is that, in the large majority of cases, the effects of continued opium-smoking are invariably injurious, and his summary of intellectual, moral, and physical effects does not differ greatly from the usual descriptions of morphinism. Mattison<sup>80</sup><sub>Sept.</sub> gives the details of his treatment of the morphia habit. He adopts the method of rapid withdrawal, but modified by what he terms preliminary sedation, which consists in giving full and increasing doses of the bromide of sodium during the few days that the morphia is being reduced, so that the maximum sedative effect is secured at the time of maximum nervous disturbance from the opium removal. The initial dose of the bromide is 30 grains (2 grammes) twice a day, increasing it 20 grains (1.3 grammes) a day, until in eight or ten days 100- to 120- grain (6.65 to 8 grammes) doses have been reached. He produces not infrequently pronounced bromism, for he describes as symptoms drowsiness, bromic breath, coated tongue, salivation, increased renal secretion, muscular twitching, and inco-ordination, aphasia, and incoherence of thought. During the time of bromal medication the opiate is gradually reduced, so that, from the eighth to the tenth day, it is entirely abandoned. A reduction of one-quarter or one-third is the usual daily reduction at first; later, more or less rapid, according to the increasing sedation; but each case

is a law unto itself, and the increase of the bromide and decrease of the opiate must depend on individual peculiarity. On the last day of using the opium, a full dose of morphine is given at bedtime to secure a sound sleep. Toward evening of the next day some reflex symptoms may be looked for, which are met by 20-grain (1.3 grammes) doses of quinine, followed by  $\frac{1}{2}$ -ounce (16 grammes) doses of fluid extract of coca every second hour. If this fails, cannabis Indica is given in full doses (60 minims—4 grammes—Squibb's fluid extract) every two hours. Hot baths or a douche of cold water are given if more decided measures are called for. For the relief of neuralgic and other pains, electricity, ether-spray, and hot water are the chief anodynes. Other remedies relieve, such as antipyrin, acetanilid, phenacetine, exalgine, croton chloral, fluid extract of tonga, menthol, locally; also, bisulphide of carbon and the camphor and chloral combination. Twenty-four hours after the final withdrawal of the opiate the patient is kept in bed from two to four days. Diet is not restricted unless the condition of the stomach and bowels renders it necessary. If the stomach rebels, rest, lime-water and milk, malted milk, ice, bismuth, chloroform, faradism, and sinapisms are employed; or, all failing, a full opiate hypodermatically. For debility, fluid extract of coca, in 4-drachm (16 grammes) doses three or four times a day, or half the quantity, combined with other tonics, such as strychnia, iron, mineral acids, etc., may be continued for weeks. Nothing equals extract of coca in removing mental and physical depression. Cocaine is unsafe for self-using, excess being almost certain. For insomnia, cannabis Indica, chloral, the bromides, sulphonal, and allied hypnotics are employed. Sometimes, simple measures, such as a hot bath, a light meal, a hot glass of milk, or an electrical application, will suffice. The importance of cheerful surroundings, occupation, and freedom from worry are essential for a long time after the habit has been conquered. The usual duration of treatment in simple cases is four weeks, the rule being to dismiss the patient, if other conditions favor, after he has been able to sleep each night for a week without a hypnotic. Lanphear<sup>61</sup><sub>May</sub> adopts a somewhat similar method of withdrawal, taking from seven to ten days. For insomnia he relies on repeated doses of sulphonal, 20 grains (1.3 grammes); monobromide of camphor, 4 grains (0.25 gramme); these drugs being reduced and finally superseded by

ammonium bromide. For delirium, hyoscyne hydrobromate,  $\frac{1}{60}$  grain (0.0018 gramme), is employed; for diarrhœa, salicylate of bismuth and codeine sulphate; for "cramps," antipyrin, 15 grains (1 gramme), hypodermatically. Rosenthall<sup>113</sup><sub>Sept. 15</sub> recommends muriate of codeine as a substitute for morphia in the cure by withdrawal. In the treatment of the chloral habit, cannabis Indica was found to act well as a substitute, combined with aloes and rhei. Tauzi<sup>596</sup><sub>No. 2</sub> recommends hypnotic suggestion as an accessory measure in the withdrawal system for the cure of the morphia habit.

#### THE COCAINE HABIT.

Zenner,<sup>53</sup><sub>Jan. 11</sub> in a paper on this subject, reports 2 cases,—one of the cocaine habit alone (a comparatively rare condition) and the other of mixed addiction,—morphine and cocaine. Both patients were physicians. In the first case the drug was used to relieve fatigue during a stress of work in doses of 5 to 8 drops of a 40-per-cent. solution hypodermatically, at the beginning only once a day; within two months an irresistible craving had been acquired. He soon abandoned himself entirely to the intoxicating effects of the drug, lost his business, squandered his property, and was brought to the brink of ruin. The period of extravagant and pleasurable ideas and visions was soon followed by that of depressed feelings, anxious forebodings, the development of delusions of suspicion and persecution, and of hallucination of sight and hearing. After four attempts at abstinence within two years, he finally succeeded, but still remains as an attendant at the asylum where he was treated. The second patient commenced taking cocaine as a substitute for morphia, the latter drug having been used for a number of years in doses of about 16 grains (1.04 grammes) a day hypodermatically. Ineffectual attempts had been made to discontinue it. The patient finally died of tetanus after injury from stepping on a fork. The delusions and hallucinations in the case were characteristic of cocaine delirium, viz., the delusion that he was being watched, visual hallucinations, pictures and images flashed on the wall by his persecutors, and combined visual and sensory hallucinations of "jiggers" in his skin and tongue, which he would attempt to pick out with a scalpel and put under the microscope. He took at one period 60 grains (4 grammes) of cocaine a day hypodermatically, with but small doses of morphine. Four years

was the period of the cocaine habit. Both patients presented the impaired health, sallow skin, loss of appetite and strength, sleeplessness, and rapid pulse. Laury<sup>3</sup><sub>Aug. 10</sub> reports a case of mixed addiction, morphine and cocaine, the habit for the latter drug having been acquired by its use as a substitute for the former, with the usual disastrous results, namely, loss of appetite and sleep, vertigo, syncopal and epileptiform attacks, and, finally, hallucinations and delusions, ideas of suspicion, jealousy, and persecution; also hallucinations of animalcules on the skin, which are so characteristic of the action of cocaine. Laury regards cocaine as a toxic agent far more formidable than morphine on account of the rapidity and intensity with which the sensory, motor, and intellectual derangements develop under its use, and warns us against employing it as a substitute for morphine with those addicted to the latter drug.

#### THE TOBACCO HABIT.

Kronfeld<sup>84</sup><sub>June 1</sub> gives an interesting historical sketch on the introduction and use of tobacco in Europe during the sixteenth and seventeenth centuries, its prohibition, and its governmental monopolization in certain countries. Norton,<sup>104</sup><sub>Aug. 30</sub> in an article entitled, "Is Smoking in Moderation Deleterious to Health?" comes to the conclusion that it is not. He does not deny that it is a poison, but considers it a poison which most individuals soon learn to tolerate to a degree that renders it practically innocuous, if used in moderation. As to what is moderation, he says that as long as a man is loading his body with the products of tobacco-smoke in quantities sufficiently small for the eliminatories to conveniently and easily carry them off, and allows these organs abundance of time to return to their normal condition, then he is keeping within bounds; otherwise a continual functional derangement is kept up, and then he is smoking to excess. A man's personal feelings must be his guide as to how much he can safely smoke. [This is a roundabout way of saying that smoking is not injurious if used in moderation, and it is used in moderation so long as it is not injurious.—Ed.] He believes that it may even aid digestion, quotes Richardson to show that it is not an important factor in affecting consumption or bronchitis, and Tarsenari in favor of its germicidal effects. Prodel<sup>142</sup><sub>June 30</sub> maintains that nicotine has, undoubtedly, an injurious effect on the function of the organs of



gestation of female tobacco-workers, chiefly with cigar-makers who have worked at this occupation for a long time. He reports the case of a healthy young woman, without signs of syphilis or tuberculosis, and whose husband was equally sound, who had three pregnancies within three years, resulting in abortion at the first or second month, without apparent cause. The woman had handled tobacco-leaves for twelve years. A patient informed him of another tobacco-worker who had six premature births. In another case related to him by Leguellant, three abortions occurred in a healthy tobacco-worker, while still another had two abortions, but after abandoning cigar-making gave birth to a healthy infant. He quotes other writers in confirmation of this view. Schneider found nicotine in the urine of tobacco-workers, and Ruef obtained it from the amniotic fluid. Lebail (1880) showed that menstruation was irregular and usually excessive among female tobacco-workers. Bordier concluded that this occupation acted injuriously in the pregnant state among Parisian tobacco-workers. Delauney maintained that abortions were more frequent among tobacco-workers than among other women in the same locality and living under the same general conditions. Kostial and Godard made similar observations. Quinquaud observed three abortions in a tobacco-worker, who, after leaving this occupation, had three healthy children. Bouchard declared that in many cities women actually seek work in tobacco-factories that they may be exposed to the abortive influence of tobacco.

Decroix<sup>760</sup><sub>Nov.15</sub> believes that tobacco has a deleterious influence on the functions of generation, and urges the passage of a law preventing the use of tobacco before the age of 16 years. Kjellberg, of Upsala,<sup>113</sup><sub>Aug.17</sub> believes that the increased consumption of tobacco is one of the factors causing increase in mental disease. He describes a form of insanity, which he terms *nicotinosis mentalis*, characterized by distressing emotions of indisposition and weakness, early hallucinations, and delusions with suicidal intent. He considers it a true primary insanity which has characteristic and clinically-recognizable symptoms following a regular course.

Parker<sup>9</sup><sub>Sept.20</sub> is convinced that smoking is especially injurious to the nasal and post-nasal fossæ, and that by it the sense of smell is apt to be impaired and may be destroyed. He reports the case of an inveterate smoker who was in the habit of blowing smoke

through his nostrils. Within a year he observed dryness of the naso-pharyngeal mucous membrane, and, finally, loss of smell. Examination showed pharyngitis and atrophic rhinitis. His sight being also impaired, tobacco was looked upon as the cause. Treatment consisted mainly in total abstinence from tobacco-smoking, strychnine in  $\frac{1}{30}$ -grain (0.002 gramme) doses t. i. d., and applications of electricity to the mucous membrane. The sense of smell returned in about a month, so that later he could recognize almost any odor.

Baraban<sup>184</sup><sub>Sept. 15</sub>; <sup>2</sup><sub>Oct. 25</sub> found marked epithelial changes in the respiratory passages of a recently-beheaded criminal who had been in the habit of smoking cigarettes very freely in his cell, living almost constantly in an atmosphere of tobacco-smoke. The conditions observed did not differ materially from those of catarrhal inflammations, but, as there was no evidence of active catarrh in this case, he attributes them to the irritating effects of tobacco-smoke.

Emirzé (Smyrna)<sup>452</sup><sub>July</sub> has examined 300 subjects who had used the *narghilé*, or water-pipe, which led him to the conclusion that when smoked in moderation, say once or twice a day, it is not only not harmful, but may be beneficial as a form of respiratory gymnastics and as an expectorant; but when carried to excess, inducing chronic pharyngeal, laryngeal, and bronchial catarrhs, angina pectoris, and pulmonary emphysema, the latter being due to the extra inspiratory effort required to draw the smoke through the water-pipe. Gautrelet<sup>24</sup><sub>Jan. 5</sub> thinks that to demand of smokers the suppression, pure and simple, of the pipe, the cigar, and the cigarette, is asking more than is compatible with feeble human nature. He seeks, therefore, to lessen the injurious effects of tobacco-smoking by introducing into a section of the pipe, or cigar, or cigarette-holder, a small plug of absorbent cotton saturated with a 20-per-cent. solution of pyrogallie acid, which removes nicotine, the secondary alkaline (pyridine, lutidine, etc.) products of combustion, without altering the taste or smell of the smoke; nor is its use followed by headache and a bad taste in the mouth. Vigier says of this method that he fears it will not be tolerable by smokers, who do not wish their tobacco to be deprived of its nicotine. His own proposal, to use citric acid for the same purpose, failed for this reason.

## LEGAL MEDICINE AND TOXICOLOGY.

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### LEGAL RESPONSIBILITY OF PHYSICIANS.

IN puerperal cases, Coc<sup>40</sup><sub>May</sub> urges strongly the need of greater care than is usually exercised in the management of convalescence after delivery. He states his firm belief that, however extensive the puerperal lesions may be which occur at the time of labor, if proper attention be paid to them seasonably, all subsequent mischief will be avoided and a fruitful class of cases for the gynæcologist and for litigation will be made to disappear. The propriety of rigid antisepsis during labor is too obvious to need advocacy. The advantages of antiseptic treatment after delivery are insisted upon. Lacerations should be repaired at once with as much care and as much attention to antiseptic details as if the operation were a secondary perineorrhaphy. This being done, some form of absorbent antiseptic pad should be applied. The bladder should be emptied by means of the catheter once in six hours until normal micturition is practicable; and, when this is attained, the vulva should be cleansed each time, iodoform should be dusted upon it, and a fresh pad applied. The bowels should be moved freely within forty-eight hours after delivery. If the cervix is injured, a hot carbolic or bichloride vaginal douche should be used twice daily, and an iodoform suppository should be introduced into the cervical canal once in twenty-four hours; this should be continued at least a week, after which the douche should be used once daily for two or three weeks more. Involution is promoted by strychnia and ergotin, given thrice daily for a month. At the end of three weeks the patient may be suffered to walk on a level, but not to go down stairs. If the uterus remains large, with a tendency to retroversion, a suitable pessary should be worn two or three months, if necessary. At the end of a month after delivery the patient may ride out, and during the next fortnight may return to her usual

habits, though she should remain under the eye of her physician for at least a month more, being on the lookout for any symptoms, such as constant backache, pains in the groins, metrorrhagia, and profuse leucorrhœa. It is only by keeping the puerperal patient under such careful and extended observation that the attendant can be sure that she has made a perfect recovery, and has no lesion which will give her subsequent trouble.

The question, How soon after delivery does the responsibility of the accoucheur cease? is answered thus by this writer: "It is not measured by days or by weeks. It ceases only when puerperal lesions have been repaired, their evil consequences averted, and when he is assured that either his patient will not require the services of the gynæcologist at all, or he will be prepared to refer her to him after explaining to her clearly the nature of her trouble and its relations to parturition. Only in this way can he hope to escape the implacable resentment which women feel for the attendant to whose neglect after confinement they attribute all their subsequent ills."

*The Medico-Legal Relations of Laparotomy.*—This subject was fully discussed in a series of papers presented in the Section of Medical Jurisprudence at the last meeting of the American Medical Association. W. W. Potter<sup>61</sup><sub>July 5</sub> exposed the rashness with which inexperienced and unskillful practitioners, who hesitate to attempt surgical operations on other parts of the body, will open the abdominal cavity and do fatal injury to its contents. He observes that "the removal of or interference with organs that have to do with the perpetuation of human life is in itself a serious business, while the necessity of conservative procedures, that shall in some cases preserve these where they would otherwise be lost, must be looked upon as entailing great responsibility, and as requiring a nice degree of discrimination not to be attained except through ample experience, special training, and much study." He insists that the propriety or necessity of the operation should be fully explained to the patient, and the consent of the husband, as well as her own, should be obtained, not only to the proposed programme, but to any provisional extension of it, before any operative procedures are taken. Special preparation of the patient should be attended to in anticipation of an abdominal section. Proper precautions should be taken in the choice and use of the anæsthetic.

The operation itself demands all the skill that the present state of science permits. The after-treatment should be absolutely in the control of the operator, and pathological specimens, the fruit of his operation, should remain in his possession. On the other hand, considering the legal rights of patients, it is clear that the physician is helpless in all cases that he cannot reach by moral suasion, and that he is at a disadvantage in that he incurs in laparotomy great legal responsibilities while possessing few legal rights. H. O. Marey <sup>61</sup><sub>Aug. 2</sub> questions the expediency, before entering upon a laparotomy, of first obtaining a written agreement of the patient, that she will hold the surgeon harmless as to the results. He says: "Although such an agreement is considered by many as a proper precautionary measure, it may, perhaps, be questioned if, in some instances at least, it might not raise doubt and distrust in the mind of the patient, reasoning that the doctor himself was not quite clear in the premises, and thus sought to throw the burden of responsibility of doubt upon the sufferer, which he himself should justly bear. This construction, at least, might be placed upon it by the average juryman, enforced, as it is sure to be, by the sympathetic plea of the eloquent attorney. When doubts arise as to the advisability of operative interference, these should be clearly stated to the patient and friends; the operation should be distinctly classed as permissive rather than advised, and, after a proper explanation of all its details, the final decision should be left to the sufferer and her friends, and not determined by the surgeon, or performed without their knowledge and full consent. With such precautions properly enforced, there is little liability of legal complications following operations in the hands of skillful surgeons."

A. Vander Veer <sup>61</sup><sub>July 12</sub> summarizes his views upon this question as follows: "1. That we should exercise the greatest care in the examination of our cases of doubtful diagnosis. 2. That when in doubt we should lay great stress upon the necessity of an exploratory incision, and make a proper explanation of what this means to the patient and her friends. 3. That, in the cases thus far brought to trial, we have reason to believe that the judges in their rulings have treated our profession with great fairness, the strong points being that the public good is not subserved by undue and willful persecution of the surgeon who has shown the proper amount of intelligence in his profession. 4. That we should seek still to

have the law so made in our favor as to eliminate the cases of willful prosecution. 5. That in the careful study of these cases we have presented the lamentable condition of expert testimony, men absolutely ignorant upon the subject, men who have never done an operation of any merit in surgery, being allowed to come upon the witness-stand and testify as experts."

#### MEDICAL EXPERT TESTIMONY.

The year has not brought forth any tangible or practicable remedy for evils inherent in the prevailing methods of using medical experts, although the subject has been widely discussed and various specific reforms have been suggested.

Thus, H. N. Sheldon,<sup>99 Jan. 9</sup> a lawyer of excellent judgment, describes the abuse and indicates the remedy in these words: "The evils by which the value of medical testimony in a court of justice is lessened are mainly two,—the learned disagreement of theories, and the stretching and straining of professional skill to reach the result required by the exigencies of litigation. Do not both of these evils spring from one cause,—the arbitrary and unrestrained voluntarism of our system, by which each party selects those, and only those, experts whose testimony will avail him, and, so far as he may, shuts the mouths of those equally competent, sometimes more skilled and learned authorities whose weighty opinions would not bolster up his cause? Our courts have found it advisable to refer complicated and intricate matters of account to auditors, whose conclusions are usually found to be of great assistance to the court and jury. Is there any practical difficulty in our following the example set us in some of the countries of continental Europe, and having medical experts appointed by the government, either *pro hac vice* or by some fixed tenure of office, who, after such investigation as might be necessary, should speak judicially, and not as hired partisans, and whose reports might be made at least *prima facie*, perhaps conclusive, testimony upon the medical questions submitted to them? Or, competent experts might be appointed to act in a judicial capacity, and not at all as witnesses, but solely authorized to hear the testimony of such medical witnesses as either party might produce before them, and report their findings to the court."

Morton Prince,<sup>99 Jan. 23</sup> illustrating his views of present unsatisfac-

tory methods by a case in court, in which large damages were claimed after a railroad accident, and in which the medical evidence given upon the witness-stand was very contradictory, not only as to opinions, but as to facts, offers the following plan as curative: "1. The examination of all claimants should be made by the experts on both sides, but in conjunction with each other, and acting as a Board. The examinations should be conducted as frequently as the Board should determine. This would not prevent preliminary and individual examinations by either side. 2. The Board experts, after thus acting, should make a sworn written report to the court in accordance with a specified form; that is, the report should contain a distinct and separate statement of the medical history, objective facts, and finally the opinions of the experts. 3. If the Board is unable to agree *on the purely objective facts* (for example, whether there was or was not paralysis, loss of sight, fracture of bones, etc.), the court should, at its discretion, direct one or more official State experts to examine the claimant in conjunction with the other experts, and report likewise in writing, with opinions. 4. A number of experts in each department of medicine should be appointed by the governor, and from them the court should select experts at its discretion. 5. At the request of either side to a case, the court should direct one or more State officials to make an examination, etc. 6. All experts should be examined in court as now."

#### PERSONAL IDENTITY.

*Identification by Means of the External Ear.*—The anthropometric methods of Bertillon for the identification of criminals are sufficiently known and appreciated. Boulland<sup>55</sup><sub>Sept. 13</sub> suggests a modification or extension of this system which appears practicable and useful. All parts of the body except the ear, he states, are subject to changes; the external ear reaches its full growth early, and is thenceforward constant in its appearance. Boulland has made a great number of measurements of the different parts of the ear,—the lobule, helix, tragus, antihelix, and antitragus,—and he finds it extremely rare to discover any two individuals with measurements of these parts identical; indeed, the two ears in the same person are not always symmetrical. Remembering, furthermore, the fact that the external ear is the organ by which parental like-

ness is readily transmitted, one sees another direction in which careful observation of the dimensions of the various constituent parts may be of medico-legal use.

*Identification of Bakers.*—G. Ranzier<sup>1</sup><sub>Sept. 27</sub> describes an appearance about the hands of bakers which is of utility in identifying the vocation. His attention was first called to it by a typhoid-fever patient, a baker, who had on the dorsal surface of the articulation of the first and second phalanges of each finger a large, round callosity, covering the width of the finger. It was a hardening of the epidermis without participation of the deeper structures, and almost disappeared during the two months' rest in the hospital. When questioned regarding the callosities, colloquially known as *bastets* or *coussinets*, the boy stated that bakers always had them. This statement was subsequently verified. The repeated shock of the flexed fingers against the dough in kneading produces the callosities. Where the kneading is done mechanically, of course, such stigmata will not be found. The author states that neither Tardieu, Max, nor Vernois, in their publications on the professional stigmata, refers to this mark of the baker and its medico-legal value.

#### THE IDENTIFICATION OF HUMAN BLOOD.

Ewell<sup>139</sup><sub>Sept.</sub> declares his belief that the present status of this subject may be summarized as follows: In the use of the micrometric test, no confidence can be placed in the result, unless the errors of the micrometer used, with reference to authentic standards, are known. Instruments used in investigation should be described. Where the subject [from whom the blood is derived] continues during a *short* period in substantially the same condition of good health, there appears in the hands of the same observer to be an average size of the *fresh corpuscles*, provided at least 100 corpuscles are measured. There are such great discrepancies between the averages obtained from the measurement of the *fresh* blood-corpuscles of animals of the same species, and between measurements of the same objects by different observers, as to throw doubt upon published results. Several tables of measurements can be given to prove this statement. There is no advantage in using very high powers in such investigations. Drying of the blood-corpuscles in a clot multiplies the difficulties of identification. It has never been proved that dried corpuscles can be restored to their normal



proportions. The mean size of the red corpuscles of very young animals is larger, and their size varies between wider limits than in adults. Many diseases alter the size of red blood-corpuscles. Fasting diminishes the size and number of red blood-corpuscles, as also do many drugs. It is impossible in the present state of science to say of any given specimen, fresh or dry, more than that it is the blood of a mammal. Other conclusions are scientifically indefensible.

PREGNANCY AND DELIVERY; ABORTION; INFANTICIDE.

*Persistence of the Hymen Through Pregnancy.*—Destarac<sup>212</sup><sub>Aug.</sub> has collected forty recorded observations of this abnormality. He has been careful to include those cases only in which the ostium vaginae was so thoroughly occluded by the hymen as to resist effectually any penetration in intercourse. In the majority of cases cited, the hymen, though presenting a minute orifice, so fully closed the entrance to the vagina that the accoucheur, called to the woman in labor, found this tough membrane in the way of any digital examination. French law makes a distinction between a rape and a crime against chastity, the rupture of the hymen, or defloration, being the differential distinction, according to which the assailant is accused, and, if convicted, is punished. These cases of persistent hymen show the error of this arbitrary classification, which is made to depend not only on the amount of unlawful force exercised by the assailant, but also on the resistance of a more or less fibrous membrane. Garimond proposes to apply the term rape (as the English and American authorities do) to all kinds of violence exercised upon the female sexual organs, whether much or little is accomplished, the intent being the same.

*Abnormal Duration of Pregnancy.*—Ingleby-Mackenzie<sup>49</sup><sub>Feb.</sub> reports a case of prolonged gestation. The woman was 32 years old, a primipara, married ten years, and had always menstruated regularly. Her last menstruation before her confinement was April 28th. She felt the foetal motion in September. She had false pains in January. She was delivered March 8th, after a labor of sixty-six hours, her pregnancy having continued three hundred and fourteen days. Pürkhauer<sup>351</sup><sub>H.3,</sub><sup>90</sup><sub>July</sub> records a similar case. A married woman, aged 26, of small stature, the mother of two children, had menstruated regularly every twenty-eight days, and had

had her last catamenia April 28. She felt foetal movements at about the middle of September. These movements ceased in December, although the foetal heart-sounds were distinctly audible on the 13th of March. The woman was delivered of a living male child, weighing 8 pounds 12½ ounces, and measuring nearly 21 inches in length. If the 5th of May be taken as the date of conception, the duration of pregnancy was three hundred and sixteen days.

*Sudden Death during an Operation to induce Abortion.*—

Vibert <sup>H</sup><sub>July 9</sub> records an instructive observation illustrating an unusual accident. If these accidents were more common they would serve a useful end to deter women from the risks of criminal abortion. A young woman was found dead in the street. Vibert made the medico-legal autopsy to determine the cause and manner of the death. He discovered pregnancy in the fourth month, but there was no sign of the beginning of labor; no lesion of any kind, traumatic or other, about the genital organs. Investigation of the case brought out the following facts. The young woman had resolved to procure a miscarriage, and to this end had gone to a female abortionist. It was an hour after taking a hearty meal when she submitted herself to the abortionist's treatment. This treatment consisted in the introduction of the canula of a rubber injection-syringe into the neck of the uterus; at the moment of this introduction, and just as the abortionist pressed the bulb once, the woman said she felt faint. The symptoms grew worse progressively, and in less than five minutes death occurred. Vibert emphasizes the fact that sudden death may thus be brought about by nervous inhibition by such a simple procedure as the introduction of a rubber tube into the uterine neck, without any lesion whatever. The effect would seem to be of the same nature as that which sometimes follows a blow over the larynx or on the abdomen. The abortionist, in this case, attributed the fatality to the recent ingestion of a large meal, and stated that in her experience, comprising more than a hundred abortions annually, she had learned to regard a full stomach as an unfavorable condition for abortive manipulations. In many respects, the mode of death, in this instance, resembles the course of incidents occurring after the entrance of air into the uterine sinuses, and corresponds somewhat with the phenomena of air-embolism under those conditions.

*Painless Labor.*—Brunon <sup>203</sup><sub>Aug 16</sub>; <sup>1</sup><sub>Sept. 6</sub> recently reported to the So-

ciété de Médecine of Rouen the case of a primipara whose labor was so nearly painless that she herself mistook it for difficult defecation and would have been delivered in the water-closet if she had not been removed from it. She felt only lumbar pains and a sense of weight in the rectum, and was not aware of the flow of liquor amnii. The author infers from this case that the discovery of a newborn infant in a water-closet pan does not necessarily raise the presumption of premeditated infanticide.

*Precipitate Labor.*—Haidenhain <sup>311</sup><sub>Oct., '89</sub> <sup>90</sup><sub>June</sub> relates the following case: An unmarried woman was seized with labor pains in the middle of the night, and got out of bed to obtain a light. She alleged that while she was doing so the child was suddenly born and fell to the floor, the umbilical cord being torn at the moment the child fell. The mother returned to her bed and fainted, remaining unconscious for a time, and when she came to herself the child was dead. The post-mortem examination of the child's body showed that it was at full term, that it had breathed, and that the cause of death was intra-cranial hæmorrhage resulting from mechanical injury to the skull, especially to the left parietal bone. Haidenhain looks with suspicion on the stereotyped attack of fainting after the birth of an illegitimate child, by which the mother remains unconscious until the infant is dead, and compares such cases with cases of labor among married women. Of 3000 labors which he has verified, in 1 only was there subsequent fainting, and that was in a delicate young primipara who lost a great deal of blood. He regards true, sudden labors in which the child is expelled without warning—especially in primiparæ—as very unusual. He also thinks that the position of the fracture of the skull is suspicious, when the jerk which would be given to the body at the moment of rupture of the umbilical cord is taken into consideration. On the other hand, the limited nature of the injury to the skull is in favor of the woman's account, as infanticide is usually attended with more violence. The opinion given is that the child lived a short time after birth, the complete expansion of the lungs being in favor of more prolonged respiration than that which could take place in the act of falling from the vagina to the ground, and that the umbilical cord was torn by the hands, the injury to the head being subsequently produced by intentional violence.

## SIGNS OF DEATH AND POST-MORTEM PHENOMENA.

*The Value of the Diaphanous Test.*—B. W. Richardson<sup>38</sup><sub>34 q</sub> distrusts the utility of the well-known phenomenon of the red color produced by the capillary circulation in the fingers when the hand is held before a light. It is asserted that when life is entirely extinct this phenomenon of scarlet space between the fingers at once ceases. Richardson says: "The statement that the test is sufficient of itself is too solemn to be allowed to go without correction; and I therefore affirm, with all possible earnestness, that the test, trusted to alone, is capable of producing the most serious error. In the case of a person in a state of syncope, where the test was most carefully applied, there was not the faintest trace of red coloration between the fingers; yet recovery from the syncope was quite satisfactory without any artificial aid. The test is one which admits of being readily tried, and, *primâ facie*, it is a good test to bring into operation. But as an absolute proof of death I should put before it: (1) the pulsation of the heart; (2) the respiratory murmur; (3) pressure on veins; (4) the electric test for muscular irritability; (5) the ammonia hypodermic test; (6) coagulation of blood in the veins; (7) rigor mortis; and (8) decomposition."

*On the Battle-Field.*—Froehlich,<sup>623</sup><sub>Nos. 18, 19, '89;</sub> <sup>243</sup><sub>Aug.</sub> recalling Baer's observation that the burial of persons apparently, but not really, dead is most likely to occur after great battles and in widely-extended epidemics, when it is important to make prompt disposal of the dead bodies, enumerates the following as the most important questions relating to the signs of death as they present themselves, practically, to military surgeons: 1. Position, whether natural or not; that is to say, impossible for the living subject. 2. Motion, or immobility. 3. Color of the skin,—lividities in contrast with ecchymoses. 4. Fixed expression of the eyes; dull condition of the cornea; insensibility of the pupils to light. In the recently-dead body, atropia causes dilatation of the pupils. 5. Normal moisture of the buccal and nasal cavities absent. Discharge of semen, urine, or fæces. 6. Pulse and respiratory movements annihilated. 7. Loss of animal heat. 8. Cadaveric rigidity developed,—a phenomenon showing itself early in soldiers killed late in an engagement, and to be distinguished from the rigidity manifested in tetanus, catalepsy, and freezing. 9. Insensibility of

the skin under irritation. 10. Visible change in the shape of the eyeball under pressure. 11. Absence of cardiac action and respiratory sound, demonstrated by prolonged auscultation and the use of artificial appliances upon the walls of the thorax. 12. Red color between the fingers not visible when the hand is held before a light. 13. No inflammatory reaction when heat or acids are applied to the skin. 14. Absence of all evidence of circulation (redness and swelling) when a ligature is applied to one of the fingers. 15. Absence of vapor from the surface of a mirror held before the mouth, subject to the exception that the same test applies in cases of deep syncope. 16. Absence of coagulated or liquid blood from the tissues in the skin affected by livid "death marks." 17. Greatly lowered temperature, tested by the thermometer in the rectum. 18. Loss of electrical reaction in the muscles.

Froelich proposes that the surgical equipment of each body of troops, hospital, and the like, should include a box of matches, a piece of strong twine about 15 centimetres long, a small mirror, a bistoury, and a clinical thermometer; the whole packed in a special case, accompanied by a card of instructions indicating the method of using the various appliances.

*Extraordinary Preservation of Human Bodies Under Water.*

—König, <sup>6</sup><sub>Aug. 9</sub> judicial physician for Hermannstadt, records some interesting details of the discovery of a number of human bodies after more than forty years' undisturbed submersion in water. The appearance presented by these bodies was remarkable. In the revolutionary upheaval of 1849, a company of Hungarian militia, having fallen in battle, were consigned to the waters of the Echoschacht, a pool of considerable depth not far from Hermannstadt. After some forty-one years their bodies have been brought up and subjected to a careful and minute inspection. König found them in perfect preservation, without a single trace of any decomposing process. Externally, they had the appearance of having been kept in spirit, like so many preparations in an anatomical museum. The epidermis was of a whitish-gray color; the muscles rose-red, feeling to the touch like freshly slaughtered butchers' meat. All the internal organs—the lungs, the heart, the liver, the spleen, the kidneys, the bladder, the stomach, the alimentary canal—were of the consistence of those in a recently

deceased person; while the brain was hard, of a dirty-gray color, as if preserved in spirit. Structurally, the organs retained their outline perfectly, and were so easily recognizable in tissue as well as configuration that they might have been exhibited for demonstration in an anatomical lecture-room. The large intestine contained feces of a yellowish-brown color, quite unaltered and inodorous; while the bladder was partially filled with straw-colored urine. But perhaps the most significant feature disclosed by these corpses is the following: In their interior abundant chloride of sodium, crystallized in cubes, had been deposited and fixed on the several tissues and organs. In the completely closed and perfectly unimpaired pericardium of the corpses, on the inner pericardial aspect, and also on the outer surface of the heart itself, salt crystals of the same kind, to the weight of 5 grammes (1 drachm 17 grains), were found adherent.

#### RUPTURE OF THE VAGINA IN COITION.

Sinaisky<sup>571</sup><sub>No. 46, '89</sub>; <sup>82</sup><sub>Aug. 2</sub> reports a case which illustrates what degree of violence it is possible to accomplish upon the genital tract when great force is exercised. A woman, of 23, healthy, applied to him to repair the lesions upon her vagina wrought by her husband, a robust young man of equal age, in their first marital intercourse. The hymen, of semi-lunar form and moderate thickness, was intact, but there was a rupture of the perineum and an opening through the vagina into the rectum, freely admitting two fingers; the vagina contained fecal matter. There was no reason for doubting the statements of both man and woman that the wounding was caused solely by violent efforts at the first attempts at sexual connection. Sinaisky, reviewing the literature of the subject, presents notes of 7 cases similar to his own. Himmelfarb<sup>317</sup><sub>No. 22</sub>; <sup>2</sup><sub>June 28</sub> writes of the causation of this injury. He states that rupture of the vagina in very old subjects during connection is a well-recognized lesion; but a similar accident in young subjects is hard to explain. He thinks that the vagina may be injured in this way, however, more frequently than is generally supposed, and that those instances of intercourse attended with sudden and severe pain, without any sign of injury about the external parts, may be examples of this class. Spaeth<sup>393</sup><sub>B. 20, 11. 2</sub>; <sup>5</sup><sub>Dec.</sub> calls attention to the danger of injury to the perineum if sexual intercourse follows, too early, an operation for

the restoration of that part of the female genitalia after rupture. He cites 2 cases in illustration of this accident. Hofmokl<sup>5</sup><sub>Dec.</sub> reports 4 cases of severe injury to the vagina in consequence of violent and forcible attempts at sexual intercourse.

#### DROWNING.

*Condition of the Eyes in those Dead by Submersion.*—Seydel<sup>311</sup><sub>Apr.; June</sub><sup>90</sup> describes what he calls a new proof of death by drowning. He found the appearance about the eyes of 12 persons who were drowned. The deaths took place in spring and summer, and the corpses were examined whilst quite fresh. The eyelids were sometimes of a blue-red color and slightly swollen; sometimes they were unchanged and partly open. On that portion of the cornea which was uncovered, twelve or fifteen phlyctenular elevations, the size of a hay-seed and of a gray color, were observed. In the less recent cases the epithelium over these spots had been destroyed and the surface of the corneal tissue was shown. After enucleating the eyeballs it was seen that the portion of cornea covered by the eyelids was clouded and covered with a swollen epithelial layer. These appearances were more clearly seen when the eyeball was placed for some hours in 50-per-cent. alcohol. The conjunctiva was regularly injected, especially in its periphery. The color of the injected membrane varied from pale red to dark violet, in accordance with the length of time the body had been exposed after removal from the water. In 2 cases, star-like, blue-red ecchymoses were seen in the injected surface. Whether similar appearances are to be met with in winter is uncertain, but, if so, probably longer time would be required for their development than in warm weather.

#### SUDDEN DEATH FROM NATURAL CAUSES.

Francis Ewens<sup>6</sup><sub>Sept. 27</sub> defines the following as the chief causes of sudden death in adults in their order of frequency: 1. Cerebral hæmorrhage. 2. Diseases of the heart and large blood-vessels (fatty degeneration, valvular diseases, angina pectoris, rupture of heart, interstitial abscess and pericarditis, aneurism, pulmonary thrombosis or embolism, impaction of a clot in a narrowed mitral orifice, capillary emboli, rupture of coronary artery). 3. Diseases of the lungs (pneumonia, pulmonary apoplexy, and hæmatothorax).

4. Certain abdominal diseases (perforation of gastric ulcer, extra-uterine foetation, hæmatocele, ruptured uterus, volvulus). 5. Certain infectious diseases (cholera, typhoid, peritonitis). 6. Cerebral tumors. 7. In parturition, pulmonary thrombosis, ruptured uterus, air-embolism, syncope, ruptured varicocele of left ovarian veins. 8. Sun-stroke. 9. Cold draughts of water, mental emotions, impaction of foreign bodies obstructing the glottis. Paul Bernard <sup>215</sup><sub>Mar.15</sub> has made an elaborate analysis of the statistics and causes of sudden deaths. The following are the conclusions which he has reached from this study: 1. In France, since 1835, the number of sudden deaths has been on the increase. 2. Three-quarters of all who die suddenly belong to the male sex. 3. Sudden death is influenced by cold, and it seems to be especially related to sudden thermometric and barometric changes. 4. The liability to sudden death increases with age. 5. Contrary to the opinions of Devergie, the heart is the organ which has the dominant part to play in the matter of the causes of sudden death. 6. Two important conditions predispose to sudden deaths of cardiac origin; these are pleuritic adhesions and an overloaded stomach. 7. It is impossible to affirm the real cause of sudden death in any given case without the evidence to be derived from an autopsy.

#### SUICIDE.

*Statistics of Suicide in France.*—The statistics of suicide in France, from 1827 to 1880, as compiled by Socquet, <sup>73</sup><sub>June 14</sub> and presented by him to the Society of Legal Medicine, show that, whereas the population had only increased in the ratio of 1 to 400 annually, suicide had increased annually in the proportion of 1 to 20. The proportion of suicides to population is 1 in 10,000. The class which furnishes the smallest percentage of suicides is the commercial class, next the domestic, then the agricultural, followed by the artisan class. The liberal professions yield the largest percentage of suicides. Strangling and hanging are the methods chiefly adopted, and the tendency is increasing. Drunkenness is becoming the preponderating cause of suicide, although, up to the present time, cerebral disease is responsible for the greatest number of each sex, and especially of the female sex. Then follow as causes various misfortunes,—loss of money, family disputes, misery, love, jealousy, grief, and debauchery. The influence of the last three causes is especially noticeable in females.



*Suicide in Old Age.*—Thivet<sup>212</sup><sub>Jan.</sub> declares that self-destruction at advanced periods of life is more frequent than is generally believed. When the ratio of suicides to population is studied, the numbers living at the different age-periods being the basis of the calculation, this fact comes out prominently. In the age-period from 40 to 60 the number of suicides is found to be 47 to the 100,000, while from 60 to 70 the proportion increases to 75 per 100,000. Between 70 and 80, in the male sex, the proportion is not maintained, while among females the contrary is true, and suicides are numerous. The suicidal tendency shows itself oftenest in states of mental depression, which are frequent in old age, when the will is enfeebled and self-control is weakened. This matter of suicide in old age has some important bearing upon the validity of wills written under such conditions. Lagrand du Saulle declares that it is a scientific error and a dangerous doctrine to regard suicide as an invariable symptom of insanity. Many wills, showing perfect mental power and great clearness, have been written just before the suicidal act which took their authors out of the world. Yet, in numerous instances, lawyers have petitioned to have wills set aside, proposing no other reason than that the testator was a suicide. The author insists that suicide is not in itself an obstacle to the validity of a will.

*Suicide by a Punctured Wound of the Heart.*—The following extraordinary case was reported to the Society of Legal Medicine by Magnan.<sup>26</sup><sub>June</sub> The subject of the observation was a woman of 32, who entered a hospital for the insane, March 6th, for treatment for melancholia. The first few days passed without any incident of note; then she became excited and complained of her head. On the 6th of April she had delusions, and was quite excitable, beating her forehead on the ground. Shortly after noon she became more tranquil; then she was seen to suddenly turn pale and fall to the ground, urine escaping involuntarily at the same moment. She was carried into the infirmary and undressed, when it was seen that a pin was thrust into her side, under her left breast. The house-surgeon, who had been called, and who withdrew the pin, found her cyanosed, the extremities cold, with the respiration superficial, slight, and irregular, the heart-beat feeble and tumultuous. She was rubbed all over, ether injected, and ammonia applied to the nostrils. In a short time the cyanosis disappeared;

the patient began to talk and appeared to have quite recovered. But after a quarter of an hour she became pallid once more; the heart ceased to beat,—she was dead. At the autopsy a minute puncture was found in the sixth costal interspace externally, and a corresponding ecchymosed space within. There was similar reddening on the pericardium for an area as large as a shilling, just at its juncture with the pericardium. The sac contained much black fluid blood, and then a large clot which covered the heart; within this was a thick, fibrinous envelope, wrapping the organ itself. The total weight of the fluid and the two envelopes was 280 grammes (9 ounces 1 grain). The apex of the left ventricle, which was deeply reddened, showed seven distinct punctures, such as a pin would make; and it seemed probable that these were inflicted at different times, but within a short interval, which would explain the two clots found in the pericardium. The position of the patient, crouched on the ground, on her left side, would enable her to reach the apex of the heart with a pin scarcely an inch in length.

*Suicide by a Blow on the Head and Fracture of the Spine.*—

An instance of this rare form of self-murder is published by F. S. White.<sup>143</sup><sub>Aug.</sub> A man of 35, under treatment for melancholia in an insane hospital, yielding to a sudden impulse, ran, head-foremost, against a tree about twenty feet from the point whence he started. He fell, stunned and helpless. He remained unconscious half an hour, with a slow pulse (45) and contracted pupils. When reaction had occurred, it was found that there was paralysis of motion and sensation in all parts below the sixth rib, with loss of sensation in the forearms. Breathing was abdominal. The patient could move his head, but complained of pain in his neck. Four days after the injury he died. The autopsy found the skull uninjured. The brain showed congestion, but no localized lesion due to the blow. There was a fracture of the fifth and sixth cervical vertebræ, involving the spinous process of the fifth and the laminae and body of the sixth. The spinal cord was disorganized at the point of the fracture, the softening extending over a portion two inches in length.

JUDICIAL EXECUTIONS.

*By Electricity.*—The first judicial execution by electricity occurred at Auburn, N. Y., August 6, 1890.<sup>59</sup><sub>Aug. 9</sub> The apparatus

devised for the purpose consisted of a dynamo capable of generating an alternating current of 2000 volts, with a death-chair and suitable electrodes, the victim completing the circuit. The death-chair was made from heavy oak, with a high, straight, and slightly inclining back and broad arms. To the back of the chair was adjusted a sliding wooden arrangement, the upper portion of which was shaped like a figure 4. The base or horizontal arm of this figure projected forward, and from the end of it was suspended the head electrode. The latter resembled very much in shape, as it hung in position, a dinner-bell with an ordinary handle; the bell being the rubber cup and the handle constructed of wood, through the long axis of which the wire of the electrode passed. This wire terminated in a metallic disk, which, being covered with a sponge, was, by a spring arrangement and the sliding down of the figure 4, brought in contact with the top of the head of the culprit. The other electrode was fastened to the lower portion of the back of the chair, and corresponded in position with that of the hollow of the sacrum. This disk of the electrode was constructed like the first, and arranged in such a way that it could be strapped against the surface of the body. There were other straps to fasten the chest, trunk, arms, forearms, and legs to corresponding portions of the chair. The head was secured by a leather mask, formed by a forehead and chin band, which was fastened to the back of the chair, leaving the nose, cheeks, and mouth exposed. The wire of the head electrode was suspended from the ceiling, while that of the other electrode passed along the floor, and, with the victim in position, completed the current. At the instant of turning on the electric current so that it should pass through the man's body by the course above described, he was apparently driven into a shrinking, crouching, rigid mass, with the exposed features in a grin and the muscles of the entire body in fixed and rigid spasm. He remained in this condition for seventeen seconds, when the current was interrupted and the muscles became relaxed with a momentary and quivering uncertainty. Then all was still and the patient was pronounced dead. Seventy-three seconds after the current was turned off a slight heaving of the chest was noticed, and this was immediately followed by slow, rhythmical, stertorous breathing. Although all sensation was abolished, the forced breathing continued, and with each expira-

tion a slight amount of mucus was bubbled through the closed lips. Notwithstanding the fact that directions were immediately given to turn on the current again, by some misunderstanding on the part of the one who ran the dynamo this was not done until two minutes had elapsed. Then the same phenomena were repeated, and the culprit was kept under the full power of the instrument—1400 volts—for two and one-quarter minutes, when all the unpleasant symptoms disappeared. As the result of this long-continued current, the moisture in the sponge of the lower electrode became evaporated, and resulted in the deep burning of the flesh at that point. As soon as the resulting smoke was discovered, the circuit was at once interrupted.

An autopsy was made three hours after the death. Rigor mortis was fully developed, the upper parts of the body being especially rigid. Hypostatic lividities were distinct on the lower portions of the body and on the depending regions of the upper extremities. There was a seminal discharge, showing dead spermatozoa. The skin of the back over the sacrum and the scalp, corresponding to the points of contact of the electrodes, showed burns. The blood was dark and fluid. The lungs showed some "tar-like" spots in their substance. The kidneys were hyperæmic. The meningeal vessels under the electrode area were carbonized, and the brain-substance itself was similarly changed at the same point. Capillary hæmorrhages were observed in the cerebral ventricles. Microscopically, the blood examined just after the death had a markedly granular appearance, suggesting electrolytic dissolution of the red corpuscles.

The use of electricity as an agent for the infliction of capital punishment has not been accepted with unanimity by medical and medico-legal writers; nor have the methods employed in the foregoing case escaped sharp criticism. Thus, B. W. Richardson<sup>38</sup><sub>3d Q</sub> writes: "Capital murder was never more thoroughly discredited; what occurred was really worse than was prognosticated. The shocks administered were intense surface shocks, attended with extreme local action, but not affecting directly or immediately the respiratory centres. The idea seems to have been that an electric shock, passed through the head, would kill like the blow of a pole-axe; an idea which a perusal of one of Benjamin Franklin's experiments, in the last century, ought to have rectified. The

doubts which have been expressed about the strength of the current and the faults of the apparatus are out of the record. The mistakes were physiological, not electrical. If the blood, which is the prime conductor of electrical vibration, had been made the conductor, a current of half the strength used would have sufficed. If the electrodes had been applied to the arms of the man,—one electrode to each arm,—with saline and damp sponges, the death would have been more determinate and far more rapid. The man was really killed by a clumsy stun, for which a dexterous blow from a pole-axe would have been an expeditious substitute. He died by a kind of gaseous apoplexy from the tension of the gases of the blood, not by the direct action of the electricity on either the structure of the nervous system or on the muscles. At the same time, whilst condemning, in the strongest terms, the degradation and the rank immorality which has been committed in the name of science, it is fair and proper to state that the man suffered nothing. The electrical stun is a stun too quickly applied to be painful."

Paul Loye, whose volume on death by decapitation<sup>1015</sup><sub>88</sub> attracted wide attention, eloquently urges<sup>73</sup><sub>Dec. 7, '89</sub> that the guillotine is far superior to the electric chair for the purposes of capital punishment. It has the advantage in the time required for the dreadful preparations for the execution; it annihilates at once and absolutely all action of the brain; it obliterates the possibility of even the slightest degree of recovery. The only advantage which the electric current can claim over the knife is in the fact that the former leaves the body of the culprit intact and without mutilation,—an advantage of doubtful value, the author remarks, since the spectacle of a decapitation is presumed to have a deterrent effect upon criminals. Besides, decapitation offers a public proof of death, and so satisfies the law to the fullest degree; while, with the electric shock, it is possible to find grounds for suspecting a simulation of death.

#### SOCIOLOGICAL QUESTIONS.

*Physical and Psychological Degeneracy of Prostitutes and Female Thieves.*—Pauline Tarnowsky has published an important work<sup>1016</sup><sub>'89</sub> setting forth observations concerning the physical and the moral decline of these two great classes of criminals. The author's

deductions are thus summarized<sup>25</sup><sub>June</sub>: 1. Professional prostitutes are incomplete beings, having undergone arrest of their development; are tainted with a morbid inheritance and show signs of physical and psychical degeneration in relation with their imperfect evolution. 2. The signs of physical degeneration due to an imperfect organization show themselves among prostitutes principally by the frequency of deformities of the head, of anomalies of the cranium (41.33 per cent.) and of the face (42.66 per cent.), by numerous anomalies of the ears (42 per cent.), and by defective teeth (54 per cent.). 3. Their psychical abnormality is exhibited either by a feebleness of intellect, more or less pronounced, or by a neuropathic constitution, or by a notable absence of the moral sense; the fact is confirmed, beyond this, by their abuse of their generative functions, as well as by the fascination which their debased occupation has for them, since they return voluntarily to it after their liberation. 4. The marks of degeneration are most pronounced in those prostitutes and thieves whose mothers were addicted to intemperance. This confirms the hypothesis that the influence of the mother is especially potent on the organism of the child. 5. The sterility and extinction of the race, often observed amongst professional prostitutes, depend in great part upon their abnormal condition, fertile in hereditary defects; this point seems to confirm the fact of their degeneration. 6. Habitual prostitutes, who cannot be classed amongst healthy and normal individuals, by the very activity which they exercise, make up the over-large deficit which criminal statistics establish in favor of women. 7. Female thieves, though also presenting a great number of physical and moral signs which notably distinguish them from honest women, are less removed from the normal type than prostitutes, for the following reasons: (a) They are burdened with a less heavy hereditary blemish than that of prostitutes. (b) The number of marks of degeneration which they present is less than that of prostitutes. (c) The number of births amongst them is more considerable. (d) The principal diameters of the skull, as well as its total horizontal circumference, of thieves, exceed those of prostitutes (the two classes belonging to the same race). (e) The zygomata and inferior maxillæ of prostitutes are larger than those of thieves. (f) The intellectual and moral horizons of thieves are loftier than those of prostitutes. The thief has more

*amour propre* ; her wit is more lively ; she is more energetic, and brings more resistance into the struggle of life. She is much less idle, and does not fear work. (g) However incorrigible the professional thief may be, and however numerous her misdeeds may have been, she cannot, nevertheless, commit them and repeat them at every hour of the day, like the prostitute, it being conceded that robbery and the traffic in the person are two vices equal in degree. Let it be conceded for a moment that the two faults are of equal criminality. In all cases the thief only offends at intervals and on occasions ; whilst the prostitute of the tolerated houses traffics with her body without cessation, abandoning the right of choosing or refusing ; moreover, she is content with her degraded existence, and does not wish to change it. 8. Anthropometric results, as well as researches into the heredity of thieves and prostitutes, the circumstances of their birth, of their subsequent life, together with the study of their intellectual and moral horizons, all unanimously concur to prove that these two groups belong to an abnormal class of females degenerate or degenerating. They are the product of the low places, of the dregs of society, and their number diminishes as the circumstances of development become improved in a cultivated society. After studying the results obtained by the investigation of these classes, the author adds the following suggestions as to the most probable remedy for the evil. To cure the evil which produces these stray sheep of civilization, it is not sufficient to punish them only, as is now the rule. The evil must be attacked at its source ; the conditions amongst which those abnormal females are born and live must be improved ; their misery must be diminished by enlarging the paths of honest and remunerative work for women desirous of remaining honest, and by admitting them to various professions and pursuits, now chiefly carried on by men. All new directions for honest work for women diminish necessarily the difficulty which they find in earning their bread and lessen their unhappiness—that evil counsellor which, apart from innate inclination, urges to debauchery and vice. Children should be withdrawn from the evil influence of vicious parents by means of the education so necessary for them. The ravages which drunkenness, syphilis, and other evils of the parents cause should be diminished ; in fact, as much care as possible should be taken that

parents should procreate a healthy race free from hereditary taint.

*The Necessity for Social and Statutory Recognition of Syphilis.*—Fisher<sup>99</sup><sub>July 31</sub> makes an urgent plea for a more rational prophylactic management of syphilis, and makes a strong case against the makers of laws for their culpable indifference to the prodigious evil which this disease entails upon the community. He quotes Gihon to the effect that “it is folly to exterminate diphtheria and small-pox and typhus and let syphilis—the most prolific mother of evil of them all—send forth her brood of whelps to be the cause of more bodily and mental misery than all other shapes of human error combined.” If the State, he urges, has a right to take into its custody one citizen because he has a disease which is dangerous to others, it has certainly the right to take another into its custody whose disease is not only dangerous to the present but most wofully so to future generations, and is developed and perpetuated by the voluntary violation of both divine and civil law. Yet syphilis—which in some of its manifestations is more loathsome than small-pox; which is as destructive, infectious, and far-reaching as leprosy; which probably causes more deaths annually than all the epidemics which visit our land—is not recognized upon the statute-book.

Next to intemperance, syphilis is the most important factor in the development and extension of the dependent classes. There is not a tissue of the body which is exempt from its subtle and undermining influence. It renders the system more liable to other diseases, behind which it hides itself as under a mask. It is ever present as a factor of depression, weakening the will, lessening the vigor of manhood, and lowering the sense of responsibility. To protect the innocent and helpless, and to check this ever-increasing burden upon the State, legislative action must be secured. But legal enactments will be successful only as they are the outgrowth of public opinion. Yet this, at least, may be secured,—that persons who have come under State control, whether as criminals they have been committed to some criminal institution, or have thrown themselves upon town, municipal, or State bounty for support, if found to have syphilis, shall not be allowed to go out until the infectious stages are past, and they have been under medical observation and treatment for a specified time.



*The Criminal Insane and their Separate Treatment.*—Church, of the Chicago Polyclinic, <sup>779</sup><sub>Apr.</sub> argues forcibly in behalf of the following propositions: 1. That in the proper disposition of the criminal insane, criminality alone should be the criterion of classification. 2. That the criminal insane should be cared for in separate institutions. 3. That insane criminals committing capital offenses should be sequestered during the period of their natural lives. 4. That insane criminals committing lesser offenses should be committed for periods equal to terms of imprisonment for their crimes made and provided, and as much longer as their insanity persists. 5. That criminal insane may be liberated upon regaining their reason by the pardon of the governor, with the consent and recommendation of an advisory board.

## TOXICOLOGY.

*Arsenic.*—Kovacs<sup>84</sup>; <sup>6</sup><sub>Mar. 1</sub> reports a case of arsenical poisoning with many points of interest. The patient, a man 40 years of age, took no less than  $2\frac{1}{2}$  drachms (9.72 grammes) of white arsenic. In about an hour the usual symptoms of severe gastro-intestinal irritation followed, which were subdued by appropriate treatment. A week later, however, symptoms of affection of the peripheral nerves developed. There were first œdema and coldness of both lower limbs, and a week later some anæsthesia of the feet, lightning pains, and unsteady gait, and anæsthesia began to make its appearance in the upper extremities, beginning in the finger-tips. The muscles of both upper and lower limbs wasted and became extremely soft, and fibrillary twitchings were frequent. The knee-jerks and superficial reflexes were absent. After four weeks' treatment the ataxy passed off and the muscles regained their former bulk. The last symptoms to disappear were the pains and paræsthesia.

Morrill <sup>99</sup><sub>Apr. 24</sub> places on record 2 cases of accidental poisoning by arsenical pigments. In one instance, a woman of 62 was suddenly seized with vertigo and unconsciousness. She remained unconscious an hour or more, and the vertigo persisted so as to confine her to her bed for nearly two weeks. For this latter symptom and for a disagreeable feeling of tightness in the head she sought medical advice. Her symptoms were anomalous and misleading, and treatment brought only inconsiderable relief. Her urine was now examined for arsenic and a "very marked trace" of the poison was detected. Questioning revealed the fact that,

several weeks before her attack, the patient had superintended the distribution of Paris green about her house before closing it for the summer. Examination of the wall-paper and hangings in the room she then occupied found a small amount of arsenic in the paper on the general surface of the wall, and a very large amount in some paper behind a large mirror, which had not been removed when the room was re-papered years before. Removal of these poisonous sources resulted in rapid improvement in the patient's condition. In the second case, a young man of 20, an athlete, whose health had always been robust, began to suffer from such extreme weakness, with palpitation and cardiac irregularity, that his condition aroused apprehension. Epidemic influenza confined him to his room and intensified his debility. His urine was found to contain arsenic; and the source of the poison was found in the skins and plumage of 11 rare birds, attractively mounted, which adorned the walls of his sleeping-room. Their transfer brought an amelioration of his condition.

*Belladonna.*—McGowan<sup>6</sup><sub>July 20</sub> records a case of poisoning by belladonna in a woman 37 years old. She swallowed by misadventure a tablespoonful of linimentum belladonnæ at about 8 A.M. When seen at noon she was totally unconscious and breathing stertorously; there were frequently-recurring convulsions; the pupils were widely dilated, so that there was only a ring of iris, and they were not influenced by light; the extremities were cold, the heart greatly excited and weak, and the pulse scarcely perceptible at the wrist. She presented all the appearances of approaching death. Some attempt had been made to procure vomiting, but without success. As she could not swallow,  $\frac{1}{10}$  grain (0.0065 gramme) of apomorphine was injected. This failed to produce vomiting, and it was not repeated; but the attending physician at once introduced the tube of the stomach-pump and thoroughly washed out the stomach. The stomach was almost empty, and there was no odor of belladonna in the water returning from it. One-third grain (0.022 gramme) of pilocarpine was injected subcutaneously. In about half an hour improvement was observed; her countenance became more natural. A little later she looked about her, and was soon able to swallow small quantities of sal volatile and strong coffee. At 5 P.M. she was sitting up in bed in a rather excited condition, and talking deliriously. She knew those

about her, but did not realize her position or know anything of what she had passed through. Another  $\frac{1}{8}$  grain (0.022 gramme) of pilocarpine was injected. It did not at any time produce perspiration, but only a little softness of the skin. From this time recovery was interrupted. She complained of thirst and dryness of the throat, and remained very weak, being unable to get up for nearly a week.

*Fugu Poison.*—This poison is derived from a Japanese fish, called fugu. Its effects are summarized thus by Takahashi and Inoko <sup>365 25</sup> <sub>v. 27, p. 881; Apr.</sub>: 1. The respiration is lowered (dogs, cats, rabbits, rats, and frogs were experimented on); its arrest occurs without convulsions. 2. The heart in mammals is not directly affected, it is the *ultimum moriens*. 3. The pulse is gradually slowed. 4. The blood-pressure sinks. 5. The vasomotor centre is paralyzed, but not the peripheral vasomotor nerves. 6. The inhibitory action of the vagus is lowered and finally abolished. 7. The respiratory centre is paralyzed, and convulsions cannot any longer be initiated. 8. The excitability of the motor peripheral nerve-twigs is lowered in mammals and lost in frogs. 9. The spinal cord is paralyzed in frogs. 10. The cause of death is evidently paralysis of the respiratory and vascular nerve-centres. In its action on the motor nerves fugu poison resembles curare, but differs by its paralyzing action on various (medulla) centres. Medicine is powerless in severe poisoning. Artificial respiration and faradization of the phrenic are indicated. In a second article in the same number of the periodical cited, the results of a chemical examination of the poison are given: 1. Fugu poison is contained in the living fish, and is not a product of decomposition. 2. It is easily soluble in water, partially so in dilute alcohol, only very slightly so in absolute alcohol; not at all in ether, chloroform, petroleum-ether, and amyl-alcohol. 3. It is not precipitated by acetate of lead, nor by alkaloid tests. 4. It is capable of diffusion, and is not destroyed by boiling for a short time. From these results the authors gather that fugu poison is neither a ferment nor an albuminoid, though it is an organic basic body.

*Chronic Lead Poisoning.*—Prevost and Binet <sup>197 90</sup> <sub>Nov., '89; July</sub> report the results of an exhaustive series of experiments relating to the effects produced by the salts of lead. The following changes were noted in the animals which were the subjects of the experimental re-

searches: A gradual loss of weight, amounting in nearly every case to one-third of the original weight; anæmia, by diminution and alteration of the red blood-globules, without increase in the white corpuscles; albuminuria, which was generally neither abundant nor constant; certain nervous phenomena—paralyses, aphonia, loss of the reflexes, and anæsthesia. Convulsions were rare, and of doubtful origin. The paralyses tended to disappear if the administration of the poison was suspended. Amongst the pathological changes contraction of the kidneys, with occasionally cystic degeneration, was the most constant. Frequently there was fatty degeneration of the liver, and occasionally pericarditis, with at times granulo-fatty changes in the myocardium. The peripheral nerves underwent segmental degeneration, but the spinal roots were rarely attacked; the restoration of the nerves was often coincident with the cure of the paralysis during life. Chemical investigation showed that the lead accumulated most abundantly in the kidneys. The amount contained in the kidneys was always in proportion to the length of time during which the animal had been taking the lead. Traces of the poison could be found long after it had ceased to be administered. Lead was found abundantly (as phosphate) in the bones. The relative proportion of the mineral and organic constituents of the bones was unaltered. The liver generally contained but little lead in those cases in which the administration of the poison had been prolonged; after a large dose the quantity might be increased for a time, but it subsequently diminished rapidly. It never accumulated in the liver as it did in the kidneys. Only minute quantities were found in the muscles, spleen, nerve-centres, eyes, lungs, heart, pancreas, genital organs, and blood. In one instance only did a young animal, given birth to by a female undergoing slow poisoning, yield traces of lead. In one animal a large cyst of the ovary developed, and both the cyst-wall and the contained fluid yielded a considerable amount of lead. To study the mode of elimination of the metal, the saliva, bile, and urine were examined with the following results: The saliva and urine contained but little lead, the bile considerably more. The slowness of the elimination is due to the slight solubility of the salts of lead. After the administration of the metal had been suspended for several months, a considerable amount was found in the kidneys and in the bones. Two animals, after prolonged administration

of lead, were treated with potassium iodide without diminishing the amount of lead contained in the kidneys. The same result followed the administration of the salts of ammonia.

*Morphia Poisoning.*—G. Sysak<sup>783 109</sup><sub>Nov., '89; Jan.</sub> gives the details of a remarkable recovery from a toxic dose of morphia. The patient, a child of six months, being somewhat constipated, a medical practitioner prescribed the following:—

R Muriat. hydr. mit., . . . . .	0.08
Magn. ustæ, . . . . .	1.00
Sacch. albi, . . . . .	3.00
M. et ft. pulv. in t. d. æq. no. viij.	
Sig.: A powder every four hours.	

The recipe being rather illegible and the synonym employed by the doctor for calomel somewhat unusual, the chemist dispensed, instead of the latter, “muriat. morphi.” The infant was made to swallow two powders in the course of the evening and one early the next morning, having received in all 0.03 gramme ( $\frac{7}{19}$  grain) of morphine. When called, about 9 A.M., Sysak found the child in a deep, comatose state, with cyanosis of the whole body, stertorous breathing, frequent general convulsions, extreme myosis and insensibility of the pupil, and almost imperceptible pulse. The treatment consisted in irrigating the infant’s head with cold water, cold-water enemata, rubbing the whole body, blisters, administration of a laxative water internally and *per rectum*, a hypodermic injection of cocaine (1 centigramme— $\frac{2}{13}$  grain), black-coffee infusion (a teaspoonful every ten minutes), and exposure to the open air. Contrary to all expectations, the author’s energetic efforts ultimately proved successful. About 3 P.M., the infant opened its eyes, the pulse improved, convulsions ceased, etc. The next morning the little girl was in her usual high spirits, all toxic symptoms having disappeared without leaving a trace. Sysak dwells upon the following points: 1. Infantile cases of poisoning by such large doses of morphine, ending in recovery, are extremely rare. 2. The case teaches that the practitioner should not despair, even in apparently quite hopeless cases of poisoning. 3. It also suggests that calomel should be always prescribed as such, or, at all events, under some unequivocal synonyms.

*Phosphorus Poisoning.*—Nathanson<sup>6</sup><sub>June 28</sub> discusses in a graduation thesis the degenerative changes caused in the liver by

phosphorus. He follows Virchow in drawing a sharp distinction between the infiltration of the liver-cells by fat-globules and their metamorphosis into fat. He treated hardened sections with ether, and found that, when these were from a healthy subject, no change was produced thereby; when they were from a liver affected with fatty infiltration, the fat-globules were dissolved, the remaining cell-structure appearing much as it had been before. When, however, the sections were taken from bodies which had died of phosphorus poisoning, the structure was entirely obliterated by the ether, and the same occurred in the case of sections of the kidneys from the same subjects. The inference is that poisoning by phosphorus produces a true fatty degeneration of the tissues of the liver and kidney. Hill <sup>Feb. 22</sup> reports a case of fatal phosphorus poisoning in a girl of 15, who, a week before she came under observation, had smeared some rat-poison on her hands and face for the purpose of producing a startling effect upon her companions at a "dark séance." The symptoms were headache, faintness, vomiting of blood, jaundice, constipation, dry and black tongue, offensive breath; a weak, thready, quickened pulse; tender abdomen, diminished liver, dullness, coma. She died on the eighth day after the initial symptoms. The autopsy found the heart-muscle friable and yellow; the gastric mucous membrane stained black along the summits of the rugæ, and, in general, swollen and softened; the intestines filled with altered blood, and displaying a mucosa changed like that of the stomach; the liver reduced to 45½ ounces in weight, showing a uniform, bright, chrome-yellow color externally, and a substance that on section was found to be soft, intensely yellow, friable, with a greasy feeling, and displaying lobules that were clearly marked out with fatty and congested areas. The kidneys showed a very pale cortex, with red pyramids. The smell of phosphorus was detected when the head was opened and sections of the brain were made. There was no luminosity of the organs. It did not appear at the inquest that the girl had swallowed any of the paste, or had used it in any way other than by inunction. The writer thinks that no similar case is on record.

*Hydrocyanic-Acid Poisoning.*—Shively <sup>July</sup> reports the following case: A student of pharmacy, 22 years old, mentally depressed by family and personal troubles, swallowed half an ounce of freshly-prepared officinal dilute hydrocyanic acid,—an amount

equivalent to  $4\frac{8}{10}$  grains (0.312 gramme) of the anhydrous acid. He was found on a bench in a public park, half reclining, unconscious, with eyes upturned and limbs relaxed. When moved he had a slight clonic convulsion. His pupils were widely dilated. Pulse, 86; respirations shallow, sighing, 40 to 50 per minute. He had vomited a teaspoonful of greenish material. There was divergent strabismus; no cyanosis. The breath had a slight odor of bitter almonds. The pulse ran up to 112, and there was increasing dyspnœa, but without lividity. There was decided trismus.

Lavage of the stomach was practiced persistently; subcutaneous and rectal injections of stimulants were given, with dry heat to the surface and especially over the heart, and the application of faradic electricity. In twenty minutes there was improvement in the condition, and in an hour the patient was out of danger, though he remained unconscious two hours. The urine, taken by catheter, gave the characteristic reactions for hydrocyanic acid. There was, also, albuminuria, with glycosuria. Three hours and a half after he had been found in the park, the patient had fully recovered and conversed freely. He said that his first sensation after swallowing the acid was a feeling of numbness of the lips, quickly followed by a shortness of breath and insensibility. There was no feeling of constriction in the throat, or of a burning sensation in the stomach, or nausea. This case is believed by the author to be unique in that the patient recovered after such a large dose of the poison. He has found that there is one case on record (Burman) in which recovery followed the ingestion of half the amount taken in this instance, and this has been quoted up to the present time as being unparalleled.

*Poisoning by Water-Gas.*—Stevenson <sup>428 25</sup><sub>v. 46; May</sub> records the details of two fatal cases of water-gas poisoning which occurred at Leeds last autumn. The victims, aged 54 and 36 respectively, were in the employ of the Leeds Forge Company, where water-gas is made and used for both lighting and warming purposes. They occupied a cabin of 540 cubic feet capacity, and were found dead in it one afternoon about 2.30 P.M.; they might have been dead about two hours. It was found that the gas-jets for their cooking-stove were turned on, but the stove was cold and the jets were not alight; there was no perceptible odor in the cabin. The bodies were removed to an adjoining room, and the autopsies were

fixed for two days later. Several medical men and two students attended, when just at the commencement some of them were taken ill; the one most severely affected became completely unconscious and was convulsed, and did not recover for some hours; the others were less severely attacked, but all present experienced some feelings of illness, and the autopsies were postponed. It was subsequently ascertained that several gas-jets in the room were incompletely turned off, so that a large escape of the gas was taking place in the room, but, being odorless, its presence was only recognized by its effects. The post-mortem examinations were made at a subsequent date, when the typical appearances of death from carbonic-oxide poisoning were found, consisting of a rosy hue of the viscera, post-mortem hypostases, a fresh appearance of the viscera, and the exudation of rosy, blood-stained fluid into the stomach, bladder, and cranial cavity. The apparent freshness of the viscera was a most striking feature, and was still manifested more than a month later. Blood-pigment charged with carbonic oxide was found in the pericardial and pleural fluid, in the contents of the stomach, and in the urine.

For the satisfactory treatment of cases of poisoning by illuminating gas, Kloman<sup>104</sup><sub>Aug. 2</sub> suggests the hypodermic injection of nitro-glycerin, in doses of  $\frac{1}{50}$  grain (0.0013 gramme), repeated in half an hour if needed. He reports some cases, illustrating serious degrees of poisoning, in which recovery after this treatment was extraordinarily prompt and complete. His observations have been confirmed by Dooley<sup>1</sup><sub>Feb. 8</sub> and by Crossland.<sup>1</sup><sub>July 6</sub>



## MEDICAL DEMOGRAPHY.

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THE subject of the depopulation or, rather, the cessation of increase of population in France, which has for recent years engaged the attention of European demographers, has been the especially prominent topic, during the year ended, of both French and English writers. More than one-fourth of all the papers and excerpts submitted to the editor of this department of the ANNUAL have been occupied with its consideration. The Académie de Médecine of Paris has discussed it at great length, and the ablest demographers of France—Levasseur, Cheysson, Rochard, Chervin, Jacques Bertillon, Vannacque, Turquan, Lagneau, Javal, Brouardel, Léon Le Fort, Hardy, and others—have devoted themselves assiduously to this inquiry.

The chief causes of the stagnation of population in France are variously stated to be the late age of marriage and the legal obstacles to it, especially in the cities, where the numerous formalities, cost of necessary papers, etc., deter from legal unions; the pecuniary embarrassments of large families; the increasingly large number of prostitutes; the lack of care of illegitimate children; the unequal emigration of adult celibates; the exactions of the military service; and insanitary habits of life.

Lagneau<sup>10</sup> July 22 summarizes his several papers on the demographic situation of France as follows:—

1. *As to Nuptiality*.—Marriages are steadily decreasing. The annual average, which, for the period from 1847 to 1860, was 285,568, has progressively fallen from 289,555 in 1884 to 284,208 in 1886, to 277,060 in 1887, to 276,848 in 1888, and to 272,934 in 1889, or only 7.1 per 1000 of inhabitants, as against 7.24, 7.41, 7.51, and 7.69 in the years preceding. When the comparatively large ratio of 9.8 marriages per 1000 inhabitants, which

was reached in 1872, after the former retardation by the war, was seen to fall to 7.4 per 1000 in 1877, six years after the war was over, it was not without reason assumed to be due to the fact of the loss of young soldiers of 20 to 22 years of age, who would have been of the marriageable age six or seven years later; but the rate has continued to steadily fall, at the same time that the age of contracting marriage is delayed, the mean marital age being for men, who marry on an average a year and a half later than in England, 29 years 9 months and for women 25 years. Marriages are also less numerous and deferred to a later age in the cities than in the country. While among 1000 adults in France, in general, 609 will be married, only 570 in 1000 are married in Paris. According to Bertillon,<sup>10</sup> June 24 there are only 8 married men in 1000 between the ages of 20 and 24 years in Paris and 129 in all France; while among 1000 married persons of all ages and both sexes there are only 181 men and 508 women under 25 years of age in the Department of the Seine (Paris), 273 men and 616 women in the urban population, and 287 men and 660 women in the rural districts; that is, three-fifths more young husbands and one-third more young wives in the country. The attraction toward the great cities increases year by year,—where the prostitute, the wine-shop, and the lodging-house make the need of a wife and a home less felt.

2. *As to Natality.*—Births are less and less numerous, the progressive absolute decrease in numbers being as follows:—

1819,	.	.	.	.	.	.	.	.	.	.	987,567
1829,	.	.	.	.	.	.	.	.	.	.	965,470
1839,	.	.	.	.	.	.	.	.	.	.	958,189
1869,	.	.	.	.	.	.	.	.	.	.	948,526
1879,	.	.	.	.	.	.	.	.	.	.	936,529
1884,	.	.	.	.	.	.	.	.	.	.	937,758
1885,	.	.	.	.	.	.	.	.	.	.	924,558
1886,	.	.	.	.	.	.	.	.	.	.	912,833
1887,	.	.	.	.	.	.	.	.	.	.	899,333
1888,	.	.	.	.	.	.	.	.	.	.	882,639
1889,	.	.	.	.	.	.	.	.	.	.	880,579

Of which latter number 73,571 were illegitimate and only 807,008 the offspring of legal unions.

The gradual decrease in births is still more conspicuously shown by the following table of birth-rates per 1000 inhabitants:—

1872, . . . . .	26.7
1873-76, . . . . .	26.2 to 26
1877-79, . . . . .	25.5 to 25.2
1880-81, . . . . .	24.9 to 24.1
1886-88, . . . . .	23.8 to 23.9
1889, . . . . .	23.04

Which, contrasted with the following birth-rates of other nations, demonstrates the feeble natality of France:—

England, 1871-80, . . . . .	35.5
“ 1881-87, . . . . .	32.9
Prussia, 1872-81, . . . . .	41.2
Russia, 1889, . . . . .	48.8

In the large cities the natality, as the nuptiality, is less than in the country. While among 100 women in Paris, from 15 to 45 years of age, 10 births annually occur, there are 12 or 13 in the rest of France.

The illegitimate natality is actually on the increase, now amounting to 8.5 in every 100 births in all France and to over 28 in every 100 (28.15 per centum) in Paris alone; whereas in England the number is only 4.8 per centum. Le Fort<sup>10</sup><sub>Oct. 28</sub> says, while there were 9145 fewer marriages in 1888 than in 1881, the number of illegitimate births had risen from 70,079 in 1881 to 73,571 in 1889,—an increase of 3492 natural births. At the same time, the number of legitimate births, 866,678 in 1881, had fallen to 807,088 only in 1889; so that France had last year 3492 more bastards and 59,770 fewer legal children born than nine years ago.

It is a noticeable fact,<sup>2</sup><sub>Oct. 18</sub> however, that the recorded marriage-rate in France is now scarcely lower than the rate in England and Wales, although the birth-rate in the two countries is so widely divergent. Indeed, so different is the age constitution of the French population from that of the English population that the French marriage-rate, calculated upon persons of marriageable ages, actually exceeds the English marriage-rate calculated in the same manner. The low birth-rate in France, compared with that in England, is, therefore, entirely due to the smaller proportion of births to each marriage, although it is also a fact that the marriage-rate has steadily declined in most other European countries, including England and Wales, though not to the same degree as in France. While the legitimate natality in the latter is small, this is owing rather to voluntary limitation, often induced by parents to assure their one or two children a better prospect in life, than

to real infecundity from congenital causes, uterine disorders following the first parturition, or venereal affections. The illegitimate natality is increased by the celibacy consequent upon the lengthy military service, by the insufficient protection of young girls who are now seduced and abandoned, by the facility of extra-legal relations in large towns, and by the numerous and often onerous formalities exacted by the marriage law, especially when one of the parties is of foreign origin.

3. *As to Mortality.*—The total annual deaths have decreased as follows:—

1887,	.	.	.	.	.	.	.	.	.	.	842,852
1888,	.	.	.	.	.	.	.	.	.	.	837,867
1889,	.	.	.	.	.	.	.	.	.	.	794,933

The death-rate, 20.5 per 1000, is therefore not much greater than that of England, which was 19.2 per 1000 from 1881 to 1887, and much below that of Prussia, which was 27.9 per 1000 from 1872 to 1882, and that of Russia, 35.4 per 1000.

City life increases mortality. While the death-rate is 20.8 per 1000 in the country, it is 24.5 in Paris and 25.2 in towns of over 2000 inhabitants. It is really greater than this; since so many nursing children are sent away from them to the country, where they succumb, and thus serve to lessen the city mortality. Paris sends 29.27 of every 100 of her newborn children—more than one-fourth—to country wet-nurses, and Lyons 48.5 of every 100, or almost half.

The mortality of young children is still disproportionately large, amounting to 168.2 per 1000 under 1 year old, and the rate is greater among natural children than among the offspring of legal marriages, 286.5 per 1000 of the former dying against 151 per 1000 of the latter; so that at 21 years of age, when the period of military service begins, 74 per centum of the illegitimate boys will have died, while only 33 or 34 per centum of the sons of married couples will be dead.

4. *Actual Increase of Population.*—As among every 1000 inhabitants of France there were 23.04 births and only 20.50 deaths, during the year 1889, the physiological increase is 2.54 per annum. In 1888 it was only 1.19. In England, for the period 1881 to 1887, the excess of 32.9 births over 19.2 deaths gave a physiological increase of 13.7 per 1000. The English nation,

therefore, increased physiologically more than eleven times more rapidly in 1888 than the French. The actual increase of population of France, according to the census of 1881 and 1886, is 2.9 per 1000, by reason of the immigration of foreigners to the number of 1,115,214 in 1886. During the same period the increase of population of the German Empire was 10 per 1000, of Prussia alone 11.93, and of Russia 12.9.

Among the remedies proposed by Lagneau and advocated by Javal for diminishing celibacy and illegitimate births and increasing marriages and legitimate births are these: to simplify the numerous and often onerous formalities of marriage; to protect young girls from seduction, raising the age of legal maturity from 16 to 21; to compel the seducer and natural father to support his illegitimate child and its mother; to care for young child-bearing women in the maternities until past the danger of uterine diseases; to aid and support illegitimate children; to restrict the duration of military service to the time actually necessary for a thorough military education, which should begin in the schools with boys of 16; to prevent the transmission of contagious diseases, especially venereal diseases; to change the laws of inheritance; to prevent or restrain the migration of the people of the rural districts into the cities and towns; to develop the colonies and encourage emigration to them from the cities; to levy a tax on bachelors; to remit the taxes on men of large families; to heavily tax the 448,773 drinking-places, which serve to keep men from establishing and supporting homes by consuming their wages and reducing them to poverty; and to inaugurate such fiscal reforms as shall multiply the means of existence, relieve the rural districts from taxation, and limit extravagant municipal loans. In thirty-one years Paris, which had effected more than two milliards of loans, has advanced from 1,456,525 to 2,344,550 in population.

Hardy <sup>10</sup><sub>Nov. 18</sub> does not believe the laws are so much to blame for the stagnation of population in France as the habits of the people and the circumstances of climate and race. Humboldt, in 1823, said that if there were 100 deaths and 125 births in France there would be 137 births to 100 deaths in England, 166 in Russia, and 180 in Prussia, which seems to prove that the actual number of births depends less on special causes than on the natural circumstances of climate and race. He finds the national love of ease,

the difficulty of subsistence, the increase of the urban population, and the weakening of the religious sentiment to be among the principal causes contributing to the relative diminution of the population.

The *Revue Scientifique*<sup>208</sup><sub>p.790</sub> ridicules the idea that premiums or other favors can induce parents to increase the number of their children, since, while perhaps an individual having six children may be incited to desire a seventh, the question is not about families like this, which are already sufficiently large, but it is those with only one or two children which it is sought to influence. It commends the assertion of Arsène Dumont,<sup>208</sup><sub>Oct.18</sub> that the lowering of the natality is the consequence of the very elements of civilization, and that if this evil be worse in France than elsewhere, it is so because of certain special conditions of our democratic *régime*. All the causes of the depopulation of any civilized people may be referred to one sole phenomenon, to which the author applies the expression, *capillarité sociale*, meaning by it the tendency every man not absolutely ignorant manifests to rise from the lower functions of society to those above him, in which irresistible movement the family is sacrificed. All men desire to be something more than they are, and children, especially when numerous, are obstacles. Hence, natality prospers among poor and ignorant people, who are limited in their aspirations.

Javal<sup>10</sup><sub>Sept.16</sub> insists that the principle cause hindering France from increasing in population as other countries, and beside which all others are comparatively trifling, is the voluntary limitation of the number of births; and he, therefore, proposed a resolution to the Académie de Médecine to the effect that the chief cause of the cessation of increase of population was the voluntary diminution of natality,—a diminution induced by the effects on numerous families of the civil, fiscal, and particularly military laws; the weakening of religious faith; the suppression of the law of inheritance, whereby younger sons feel less impelled to exert themselves; and the generalization of the military service. Le Fort finds support for the belief that the law of the civil code requiring equal division of property is one of the causes of relative infecundity, in the fact that in the Rhine Provinces, where, by a singular anomaly, the French civil code still prevails, the natality is more feeble than in the other provinces of the German Empire. He looks to the

suppression of the liberty of the rum-shop, of the liberty of prostitution, and of the liberty of seduction to diminish the social peril. If the number of illegitimate unions, the smaller number of legal marriages, and the older age of persons marrying contribute to lower the natality of France, these alone do not suffice to explain either her feebleness of natality, compared with other nations, or the decrease of her fecundity. This, as Javal has shown, is to be found in the infecundity of legitimate unions. Among 10,824,000 families in France the number having more than 3 children does not exceed 2,032,000 (less than one-fifth of the whole), and 7,280,000 families have among them only 7,872,000 children, but 1 (1.08) to a family, and this condition of infecundity exists in every grade of society.

Le Fort<sup>10</sup><sub>Oct. 28</sub> referred to the fact that more than twenty-three years ago (March 29, 1867) Broca had inaugurated the first discussion of the subject of the movement of population by presenting the following table, in which he contrasted the populations of certain European States, among every 10,000 of which there would be the following:—

EUROPEAN STATE.	Youths and Children under 20 Years.	Adults from 20 to 60 years.	Old Persons of 60 Years and upward.
France . . . . .	3012	5373	1015
Belgium . . . . .	4132	4973	895
Great Britain . . . . .	4534	4732	734
Prussia . . . . .	4740	4683	577

And he congratulated the Academy that France held the first rank in all three groups, having the greatest number of productive, self-supporting individuals, and the smallest number of children. Le Fort states that at that time he propounded the question: "If you have to-day only a small number of children, how can you later expect to have a great number of adults?" The facts of the present time demonstrate the pertinence of the question and the fallacy of Broca's boast.

Rochard<sup>10</sup><sub>Oct. 7</sub> urged the Academy to attend to the hygienic aspect of the question, and, not being able to increase the natality by direct measures, to attempt to control and lessen morbidity and mortality. It is possible, he says, at least to diminish the number of sterile unions, in which the infecundity is not so much volun-

tary as due to debility and nervous disorder of the mother, the result of vicious early education, and to the physical weakness and incompetence of the father, the victim of precocious excesses. It is possible to diminish the still-born, lessen the diseases of infancy and childhood by compulsory vaccination, and improve the sanitary condition of dwelling-houses.

Brouardel<sup>10</sup><sub>Nov. 11</sub> declares that 30,000 annually die in the vigor and prime of life of preventable diseases who might be added to the population. Small-pox alone killed 14,000, while in Germany, where vaccination is obligatory, only 110 died from this disease. There were 23,000 fatal cases of typhoid fever in persons between the ages of 15 and 25, in 99 per centum of which impure drinking-water was the means of propagation.

Dujardin-Beaumetz advises regulations against the abuse of tobacco as a cause of feeble natality. He also advised provision for the marriage of priests, the suppression of the marriage *dot*, which would give healthy young girls a better chance, and against the increasing number of public functionaries.

Levasseur<sup>3</sup><sub>Sept. 17</sub> finds the fecundity of a people to depend on different causes, but chiefly marriage, and causes favoring marriage, especially of the young, favor fecundity. He does not think that physiological differences in procreative power have been scientifically demonstrated as explanatory of race infecundity. Prolific populations are found among the Flemings and Walloons, as among the Arabs and Roumanians, and it is notorious with what fecundity the French race multiplies in Canada. A census taken in 1765, after the loss of Canada by the French, showed 69,810 in Canada and 19,939 (of whom 10,150 were French and 9,780 English) in Nova Scotia (formerly *P Acadie*). After the War of Independence of the United States about 40,000 Royalists emigrated to Upper Canada and Nova Scotia. In 1881 these territories, including Newfoundland, had a population of 4,324,810, having decupled in three-quarters of a century, the increase of the French alone having been from about 80,000 to 1,298,929, and, including Frenchmen living across the border within the United States, nearly a million and a half; proving that the French race is not doomed to sterility, and that other than physiological causes lessen fecundity. Some demographers believe that the progeny of mixed marriages between husbands of one race and wives of an-



other is less fecund; but de Quatrefages maintains that one is as fecund as the other, and that the world, in fact, is largely peopled with mixed races. Critical observers, however, declare<sup>1057</sup><sub>Nor.</sub> that the tendency among Eurasians—those half of European and half of Asiatic blood—is to the dying out of the family, although the anatomical variance of the parents is so trifling, while the psychical contrast is much more marked. If intermarriage prove barren, will intercommunion bear fruit?

M. Kiær, in Norway, has made a curious research to determine the influence of the ages of parents on fecundity, and he presents his general results in the following table:—

AGES OF HUSBANDS.	AGES OF WIVES.								Mean Number of Births to 100 <i>Husbands</i> of the Ages Indicated.
	15 to 19 Years.	20 to 24 Years.	25 to 29 Years.	30 to 34 Years.	35 to 39 Years.	40 to 44 Years.	45 to 49 Years.	50 to 54 Years.	
15 to 19 years . . . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	27.0
20 " 24 " . . . . .	. . . .	53.4	48.9	. . . .	. . . .	. . . .	. . . .	. . . .	49.5
25 " 29 " . . . . .	. . . .	50.3	45.1	40.1	. . . .	. . . .	. . . .	. . . .	43.6
30 " 34 " . . . . .	. . . .	52.6	42.4	37.2	32.8	19.1	. . . .	. . . .	37.7
35 " 39 " . . . . .	. . . .	. . . .	41.3	34.6	31.7	19.7	4.6	. . . .	30.3
40 " 44 " . . . . .	. . . .	. . . .	39.2	33.1	29.4	19.9	4.9	0.29	22.5
45 " 49 " . . . . .	. . . .	. . . .	. . . .	32.0	27.5	17.1	4.6	0.36	12.8
50 " 54 " . . . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	3.9	0.13	6.3
55 " 59 " . . . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	2.6	0.09	2.6
60 " 64 " . . . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	0.03	1.33
65 " 69 " . . . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	0.66
70 " 74 " . . . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	0.32
75 and over . . . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	0.20
Mean number of births to 100 <i>Wives</i> of the ages indicated . . . .	41.3	51.9	43.0	36.0	30.0	18.1	3.3	0.16	

The general mean being 19 births to 100 families, the number is greater when husband and wife are younger,—provided, always, they are at least 20 years of age. The maximum, 53.4 births per 100 families, occurs where both parents are between 20 and 25 years old. Between 30 and 35 years of age 1 woman in every 3 was found *enceinte*. After that period the fecundity decreased to the 40th year, and beyond this age it falls rapidly and practically ceases at 50. Men preserve the privilege of paternity longer, and

their age has less influence on natality than that of women. While a husband of 45 to 50 has  $27\frac{1}{2}$  chances in 100 of becoming a father by a woman of 35 to 40, a woman of 45 to 50 has only  $4\frac{1}{2}$  chances in 100 of becoming a mother by a man of 35 to 40. Some men are fathers at 75 years of age, but Kiær has not recorded an instance of maternity at that age.

When bringing Levasseur's work <sup>153</sup><sub>Aug. 7</sub> on the history and demography of the population of France before the *Accademia dei Lincei*, of Rome, Bodio presented the following instructive comparisons between this population and that of the Italian peninsula during corresponding periods:—

## FRANCE.

PERIODS.	POPULATION.	DENSITY.	
		Sq. Km.	Sq. Miles.
Under Julius Cæsar . . . . .	6,700,000	12	31
At end of first century of Christian era . . .	8,500,000	16	41
At end of fourteenth century . . . . .	21,000,000	40	104
1500-1550, A. D. . . . .	14,000,000	40	104
1696-1699 A. D. . . . .	20,000,000	40	104
1719 A. D. . . . .	18,107,100	34	88
1760 " . . . . .	24,000,000	42	109
1789 " . . . . .	26,300,000	49	127
1801 " . . . . .	27,445,297	52	135
1881 " . . . . .	37,672,048	71	184
1886 " . . . . .	38,218,903	72	186

## ITALY.

PERIODS.	POPULATION.	DENSITY.	
		Sq. Km.	Sq. Miles.
Under Augustus . . . . .	5,500,000	23	59
At end of first century of Christian era . . .	7,000,000	28	72
1550 A. D. . . . .	11,200,000	39	101
1700 " . . . . .	13,500,000	47	122
1770 " . . . . .	16,500,000	57	148
1800 " . . . . .	18,200,000	63	163
1881 " . . . . .	28,459,628	99	256
1889 " . . . . .	30,947,306	108	280

If the doctrines of Malthus continue to be accepted in France as the duty of married men, she will have little chance in any future struggle with Germany, should Napoleon's saying be true that "Providence is always on the side of the big battalions." <sup>2</sup><sub>June 21</sub> The

excess of births over deaths in the German Empire for 1888 was 618,581 against 605,155 in 1887. In France the excess in 1888 was only 44,772, as contrasted with 56,536 in 1887. In Germany there was 5,995 more marriages in 1888 than in 1887; in France, on the other hand, there were 6,360 fewer marriages for corresponding periods.

The increment of population in Prussia alone in 1889, as compared with the statistics of the year 1888, is shown to be as follows <sup>6</sup><sub>Oct. 18</sub> :—

YEAR.	No. Living Children Born.	Number of Still-born.	Number of Other Deaths.	Increment.	Marriages.
1888 . . . . .	1,091,218	42,780	665,429	425,789	233,421
1889 . . . . .	1,094,504	42,084	682,719	411,785	240,996

*The Significance of the Marriage-Rate in England.*—Ogle <sup>22</sup><sub>Mar. 26</sub> has pointed out the fallacy of the belief that the marriage-rate rises and falls with the price of wheat, since the opposite is often the case; but it is true that it oscillates with the rise and fall of export values, since brisk export trade causes high freights, which means increased activity at home, more wage-earners, and consequent ability and disposition to assume marital relations. With respect to the influence of the marriage-rate on the birth-rate, Ogle shows that a legitimate birth-rate of 3.9 per 1000 would compensate for the deaths, and hence suffice to keep the population stationary; and, as the lowest rate hitherto has been 14.1, England is far from the plight in which France finds herself. As the marriage-age varies inversely with the marriage-rate, satisfaction is found that since 1873 the mean age at marriage has been constantly increasing in England. This alone, in the aggregate, means a considerable reduction in population; but any material diminution in the growth of population must be obtained by retarding the age of women and not that of men, since it is the age of the wife and not that of the husband which is important. Assuming a lowering of the birth-rate to be desirable, an advance of 5 years in the average marriage-age of women would suffice to bring the growth of the population to a standstill.

Ogle <sup>2</sup><sub>Mar. 22</sub> gives some curious facts as to the marriage-ages of different classes in England; the mean age in the professional

and independent classes is seven years more advanced for men and four more for women than in the class of miners, and, generally speaking, the higher the class the later the age for contracting marriage,—more persons, too, remain celibate in the upper than in the working and artisan classes.

It appears from English vital statistics<sup>Feb. 24</sup> that where the proportion of women engaged in industrial pursuits is large, the ratio of early marriages, as well as the actual marriage-rate, is high, and consequently the birth-rate is also high; but it is also a fact that the rate of infant mortality is abnormally high where the number of women so engaged is much above the average.

The last annual report of the Massachusetts Statistical Bureau, however, declares that in fifty cities and towns containing over 64 per centum of the total population of the State of Massachusetts the employment of women in industrial ("gainful") occupations has not decreased the number of marriages or of births, and neither has it increased the number of deaths, although the proportion of women so employed has risen from 21.3 per centum of the whole in 1875 to nearly 30 per centum in 1885; that is, an increase of 64.6 per centum in ten years of women employed in industry, while the female population had only increased 17.7 per centum in that time.

*The Effect of Birth-Rate Upon Death-Rate.*—The old fallacy<sup>Oct. 4</sup> that a high birth-rate causes a high death-rate has been the basis of an argument that, under equal sanitary conditions, the death-rate in France ought to be considerably lower than in England; because the mean birth-rate in France was only 23 per 1000, whereas in England it is 31 per 1000, and there are consequently fewer children of the age of greatest mortality. It is true that in England and Wales 136 of every 1000 of the enumerated population in 1881 were children under 5 years of age, while in France the census shows only 92 of such per 1000; but the death-rate of persons aged upward of 60 exceeds that among children under 5, the former being, according to Farr's life-table, 71.7 per 1000, against 65.7 among the latter. Now, while the English population contained in 1881 only 74 persons per 1000 aged 60 and upward, 1000 of the French population contained 123 persons of these ages. Thus, the aggregate proportion of young children and elderly persons (all liable to high death-rates) was 209 per 1000

in England and 215 in France; so that, all other conditions being equal, the French death-rate would exceed the English by 1.3 per 1000. In fact, in the five years ended in 1888 the French recorded death-rate was 22.3 per 1000 and the English only 18.9 per 1000, showing a difference of 3.4, of which only a little over one-third can be attributed to difference of the age constitution.

*The Marriage Age in Japan.*—A committee of the professors of the Imperial University at Tôkiô,<sup>200</sup><sub>Feb.</sub> to whom was referred the question of the earliest age at which men and women can marry in Japan without injury to the health of themselves and offspring, report that they find, from inquiries and physical examinations, that (1) the establishment of puberty, dating from the commencement of menstruation, in the women of that country takes place at the average age of 14 years 8 months; (2) the increase in stature, and therefore of growth, ceases between 16 and 18 years; and that consequently (3) the earliest proper age for marriage of women is in the period between 14 years 8 months and 17 years and for men in the period between 16 and 18 years. The Imperial Census for the year ended December 31, 1886, shows that most of the marriages actually took place at an age above 17 in the case of men and above 15 in the case of women, which ages may be assumed to be the earliest at which men and women, respectively, should marry.

In India sexual relations often begin prior to menstruation,<sup>99</sup><sub>Dec.25</sub> and efforts are being made during the current year to enact a law raising the age of betrothal to 12 and of consummation to 14, but it is opposed by native Hindoos.

It is of interest, in this connection, to note the measurements of the stature of 670 Japanese girls and 2458 Japanese boys and young men, made during the course of this investigation, and contrast them with the condensed results<sup>1058</sup> of 38,571 similar measurements of Americans of both sexes, during the period of adolescent growth, reported by Prof. Henry P. Bowditch, among Boston school-children; Medical Director Albert L. Gihon, among cadets at the United States Naval Academy, at Annapolis, Md.; and Prof. Edward Hitchcock, among students at Amherst College during his twenty years' charge of the department of physical education at that institution:—

STATURE OF JAPANESE AND AMERICANS OF BOTH SEXES DURING PERIOD OF  
ADOLESCENT GROWTH.

Ages—Years.	FEMALES.				MALES.							
	Japanese Girls.		Boston School-Girls.		Japanese Young Men.		Boston School-Boys.		Annapolis Naval Cadets.		Amherst College Students.	
	Cm.	In.	Cm.	In.	Cm.	In.	Cm.	In.	Cm.	In.	Cm.	In.
5			104.9	41.3			105.6	41.6				
6			110.1	43.4			111.1	43.7				
7			115.6	45.5			116.2	45.5				
8			120.9	47.6			121.3	47.8				
9			125.4	49.4			126.2	49.7				
10			130.4	51.3			131.3	51.7				
11			135.7	53.4			135.4	53.3				
12			141.9	55.9			140.0	55.1				
13	139.3	54.8	147.7	58.2			145.3	57.2				
14	143.1	56.3	152.3	59.9			152.1	59.9	149.0	58.7		
15	144.3	57.0	155.2	61.1	143.4	56.4	158.2	62.3	155.2	61.1		
16	147.0	57.9	156.4	61.6	148.2	58.3	165.1	65.0	162.3	63.9		
17	145.7	57.4	157.2	61.9	150.0	59.3	168.0	66.2	166.1	65.4	168.8	66.4
18	147.9	58.2	157.3	61.9	152.2	59.9	169.3	66.7	168.6	66.4	169.7	66.8
19	146.3	57.6			152.7	60.1			169.9	66.9	170.5	67.1
20					155.5	61.2			170.9	67.3	172.2	67.8
21					157.5	62.0			171.2	67.4	172.4	67.9
22					160.0	63.0			171.2	67.4	172.6	67.9
23					157.4	62.0			171.7	67.6	173.1	68.2
24					159.2	62.7			172.2	67.8	173.4	68.3
25					159.5	62.8					174.1	68.5

It appears, therefore, that Japanese girls from 13 to 18 years of age are from  $3\frac{1}{3}$  to  $4\frac{1}{2}$  inches (8.4 to 11.5 centimetres) shorter than Boston school-girls of the same ages, and that Japanese boys from 15 to 25 years of age are from 5 to 7 inches (12.7 to 17.7 centimetres) less in stature than the average American youth of corresponding ages; and, further, that, while Japanese girls of 16 to 19 years are only  $\frac{1}{2}$  to  $2\frac{1}{2}$  inches (1.2 to 6.5 centimetres) shorter than their male relations, Boston girls are  $3\frac{1}{2}$  to  $4\frac{3}{4}$  inches (9.7 to 12 centimetres) less in height than Boston boys. It is also noteworthy that at 15 years of age the Japanese girl is more than  $\frac{1}{2}$  inch (1.5 centimetres) taller than the Japanese boy of that age, as the Boston girl from her 11th to 14th year is likewise from 0.09 to 0.95 inch (0.3 to 2.4 centimetres) taller than the other sex.

*Civilization and Childbirth.*—It is asserted that, so far as the female sex is concerned, civilization is not an unmixed blessing. Mrs. Mona Caird <sup>22</sup><sub>Mar. 26</sub> is of opinion that civilized woman is at a disadvantage in marriage because she has to bear more children than she desires or can rear without damage to her intellectual as well

as to her physical life. Fothergill<sup>138</sup><sub>Sept.</sub> calls attention to the demographic degeneration induced by the unnatural influences of town life, which is the product of civilization. The educational burden, which is felt more by town children than by those in the country, makes a heavier demand on the nutritive powers, especially in girls, whose growth is more rapid than that of boys, and whose dwarfed organisms render them unfit material for child-bearing. Parturition in the Hottentot and other savage races<sup>22</sup><sub>July, 91</sub> is as easy and natural an act as with the animal world, while for the average civilized town-dweller it has come to be a dreaded ordeal. The pelvis grows smaller through the evolutionary process of civilization, both from atrophy of the muscles attached to it and other reasons; while, at the same time, the head of the child is growing larger through the development of its contents and the greater number of big-headed children saved by art.

*Limitation of Population.*—Keppler, of Venice,<sup>59</sup><sub>Jan. 17, 91</sub> reasoning from the fact that spaying for salpingitis and other inflammatory affections in young women does not diminish the sexual appetite, but, notwithstanding certain changes in the genital organs, allows these women to marry and live happily with their husbands, suggests that marital union with a spayed woman is the ideal of a Malthusian marriage, as a happy married life without conception and without danger to health can thus be obtained. Very different is the result of the operation in middle-aged women with fibroma, for it entirely destroys all traces of sexual instinct.

Knott,<sup>22</sup><sub>July, 91</sub> referring to the allusions to the operative liberties taken with the bodies of females by the ancient Egyptians and Lydians in the writings of Strabo and Alexander *ab Alexandro*, says that the majority of ethnologists (Morand, Diemerbroeck, Murat, Hyrtl, etc.) believe that the operation in question is that of normal ovariectomy. Roberts found that ablation of the ovaries was a procedure of time-honored antiquity in India, and he ascertained by physical examination of some of these unsexed personages, who were about 25 years of age, and perfectly healthy, strong, and muscular, that the mammae had remained wholly undeveloped, the pubic hair was conspicuously absent, the usual subcutaneous fat lacking in the pubic area, the pubic arch exceedingly narrow, the vaginal orifice practically obliterated, the menses had never appeared, and sexual desire never manifested.

One of the most primitive of all existing races, the New Hollanders, was found by Micklucho-Maclay to practice artificial removal of the ovaries for the utilitarian purpose of creating a supply of barren prostitutes, and MacGillivray discovered a native at Cape York who had been ovariectomized because she was born dumb, showing that long before modern oöphorectomy the operation had been performed to prevent increase of population. Among other characteristic interferences with the genital apparatus of demographic interest are the depilation of the pudendal area by the Mohammedans after marriage, and by the women of the coast of Guinea before it, by the Tonga Islanders, the Japanese, and Chinese; the elongation of the labia and nymphæ of Hottentot women by traction and suspended weights, as described by Le Vaillant; the development of the præputium clitoridis, sometimes to the extent of 18 or more millimetres ( $\frac{3}{4}$  inch), characteristic of the female population of Bethuanaland; the corresponding manipulations practiced by the females of Basorto Land; the induced hypertrophy of the clitoris among the Arabs, Greeks, Abyssinians, Mandingoes, and other Africans; and the physical means of maintaining chastity, known as infibulation, practiced by the women of the Soudan. These procedures, with the operations of circumcision and clitoridectomy in vogue in Egypt, on the Upper Niger and elsewhere, indicate the universality of the tendency among the negro races of Africa to distort the genital organs.

*Civilization as Cause of Race Extinction.*—The gradual disappearance of the *red men* of America<sup>6</sup><sub>Aug. 18</sub> is not another illustration of the assumed law that an inferior (colored) race necessarily succumbs in contact with a superior, for the Malay and the negro have held their own numerically beside the whites. It is true that the last native has disappeared from Tasmania; that the native Australian is to-day rarely seen in Victoria, South Australia, or New South Wales, and still more seldom in Queensland and Western Australia; and that the Maori of New Zealand, the Sandwich Islander, and the Tahitian are all giving place to the Anglo-Saxon; but in these instances, as in that of the red American Indian, the explanation can be found in the changed habits, mode of life, and vicious indulgences which contact with civilization has brought about. Phthisis, scrofula, alcoholism, and syphilis, the handmaids and attendants of modern civilization, are the



real destroying factors, and not the mere association and commixture with a higher race. This finds confirmation in the fact that the excessive mortality now common among the emancipated negroes of the Southern States of the American Union was not the rule before the war, when, according to Le Hardy, <sup>117</sup><sub>Apr.</sub> the ratio of deaths among the blacks was smaller than that among the whites. The removal of the wholesome, enforced restraints placed upon them as slaves has left them free to the influence of their natural propensities. The indiscriminate intercourse of the sexes has led to the prevalence of syphilis, which, with intemperance, scrofula, and phthisis, is rapidly contributing to reduce the former rate of increase of the negro race in America, as it does wherever else the vices of civilization are allowed to become rife.

*The Negro Race in Africa.*—The numerous expeditions of exploration into the interior of sub-equatorial Africa have given demographers, during the present year, the opportunity of a better acquaintance with the people of this region. Hovelacque <sup>17</sup><sub>Mar. 18</sub> declares they are to-day, in their own home, the same lascivious, thieving, deceitful, and lying race they have been found to be elsewhere. The negro is so lazy that he works only under compulsion and for the means to merely live, passing his youth in pleasure and debauchery, his later years in idleness. He presents a tranquility unknown to most men, since he is without regret for the past or projects for the future. The negress is without shame or decency, seeking her gratification with strangers rather than her own husband. He sums his study of their general ethnography in the following conclusions: The African negroes, of whom he treats of sixty-two groups or races in Senegambia, Guinea, Soudan, and the Upper Nile, are inferior in intellectual development and civilization to the mass of European populations; in an anatomical point of view the negro is less advanced in evolution than the white; the African negroes are what they are—neither better nor worse than the whites; they simply belong to another phase of intellectual and moral development. These childish populations have not been able to arrive at a well-advanced mentality, and for this slowness of evolution there have been complex causes, some of which are inherent to the very organization of the nigritic races, others due to the nature of the habitation in which these races are cantoned. Nevertheless, it may be

asserted as the result of experience that to seek to impose European civilization on the black people is a mere chimera. A negro once said to a party of white travelers that the civilization of the white was good for the whites, but bad for the blacks, and no saying could be truer; it is impossible to deny that wherever Christian missions have penetrated, whether they be Protestant or Catholic, they have only evolved hypocrisy and a refinement of depravity. Ought we, therefore, then, to be indifferent to the destiny of the African black and not attempt to make him benefit by our progress? By no means; but let us at least spare our treaty brandy, our religious missions, and our gun-shots to this big, credulous, and inconstant child,—child in character and in understanding,—in whose lifeless brain there lacks the power of grouping a certain number of simple ideas into one complex phrase. Hence it is idle to impose a civilization upon him which does not suit him and which he cannot comprehend.

Chief among the tribes of Central Africa,<sup>2 June 14</sup> are those of the fertile lands of Uganda and Unyoro, lying between Lakes Victoria and Albert Nyanza, where the Arab traders from Zanzibar have introduced the customs and articles of commerce. The Wanyoro, or people of Unyoro, are light-colored or rather red, cleanly, clothed (except that young girls go nude until their marriage), addicted to earth-eating, tobacco-smoking, and mutilation by extraction of the four lower incisors, and with very simple notions of morality. Many women are barren and few have more than two or three children; child-bearing only takes place between 12 and 25 years of age. Unlimited polygamy is one of the causes which reduce the population. Prostitution is legally sanctioned and protected.

The Woganda, of Uganda, resemble the Wanyoro. The men are clever, strong, and active; the women have oval, orthognathous faces, well-developed ears, and large eyes. The legend runs that these regions were formerly occupied by a black-skinned agricultural people, who were conquered by a white-skinned man-eating race of herdmen from the northeast, from whose admixture the present people have sprung. Their emperor, Mtesa, lived on the shores of Victoria Nyanza in a state of barbaric splendor; but, notwithstanding the intelligence and skill of the race, "all who have had anything to do with these people agree that, as a whole, they are crafty, lying, murderous thieves."

The Monbuttu tribe, who live to the far west of the Unyoro, are an animal-feeding race, who are cannibals when opportunity offers. Their women are noted for their fecundity and are said to bear more female children than males. Circumcision is practiced, and both men and women mutilate themselves by cutting out a piece of the concha and by filing a triangular space in the upper central incisors. The heads of the infants of the ruling families are bandaged so as to lengthen the horizontal axis. The Zandé, to the north, are inveterate cannibals. The Bari are distinguished by artificial compression of their skulls in front of the ears, which increases the height all along the sagittal suture. Among the Madi and Shuli sheds are erected in the villages, where the nubile girls sleep and access to them is allowed of pubescent boys.

The Masai tribes, <sup>2</sup><sub>June 21</sub> inhabit the rich volcanic country east of the Victoria Nyanza. They are not negroes, have good cranial development; straight, well-shaped noses; eyes with a slight Mongolian slant, prominent cheek-bones, jaws rather prognathous, chocolate-colored skins, and well-proportioned limbs. They elongate their ears enormously. The married men and women live in kraals apart, and the unmarried girls and warriors live by themselves in other villages in promiscuous intercourse. They have no religion and no belief in a future. The women are clothed, but are as distinguished for audacity and vice as the Wa-karirondo, who live to the north of the savage Masai, are for their modesty and virtue.

The Wanyamwesi have become the trusted porters of all exploring expeditions or trade caravans to the interior, and have great strength and endurance, and are docile and courageous if well fed.

The Nyam-Nyam, or Akka pigmies, of the forests of Central Africa, were mentioned by Herodotus and described by Du Chaillu as being of an extremely low type, about  $4\frac{1}{2}$  feet high, with the body covered with tufted hair. Stanley, <sup>2</sup><sub>July 5</sub> who had especial opportunities of acquiring reliable information about them in his last journey, gives the following measurements of one of the captured dwarfs: "Height, 4 feet; around head,  $20\frac{1}{4}$  inches; from chin to back top of head,  $24\frac{1}{4}$  inches; around chest,  $25\frac{1}{2}$  inches; around abdomen,  $27\frac{3}{4}$  inches; around hips,  $22\frac{1}{2}$  inches; around wrist,  $4\frac{1}{4}$  inches; around muscle of left arm,  $7\frac{1}{2}$  inches; around ankle, 7

inches; around calf of leg,  $7\frac{3}{4}$  inches; length of index finger, 2 inches; length of right hand, 4 inches; length of foot,  $6\frac{1}{4}$  inches; length of leg, 22 inches; length of back,  $18\frac{1}{2}$  inches; arm to tip of finger,  $19\frac{3}{4}$  inches. . . . His color was coppery; the felt over the body was almost furry, being nearly half an inch in length. . . . His hands were very delicate, and attracted attention by their unwashed appearance."

A queen of the pigmies is described as of a light-brown complexion, with broad, round face, large eyes, and small but full lips, in height about 4 feet 4 inches; on holding her arms against the light they were seen to be covered by a whity-brown felt. The pigmies live in villages formed of huts like low bee-hives. These villages are grouped together in camps, and every track leading from them is carefully guarded by scouts. These little people are extremely vindictive, and, owing to their superior craftiness, their quick intelligence, and their knowledge of poisons, with which they daub their arrows, they are both formidable enemies and valuable allies. All tracks of the forest lead through their encampments, so that it is necessary either to make friends of them or to have the power of fighting them.

In Western Equatorial Africa, the tribes, which are split into independent clans, are not cannibal south of the equator. The despotic systems of Eastern Africa are unknown, but polygamy and slavery prevail as in other parts of Africa. The population of Africa is admitted to be decreasing, and Du Chaillu mentions, as the causes, "the slave-trade, polygamy, the barrenness of the women, death among children, plague, and witchcraft." Small-pox, elephantiasis, leprosy, and dysentery are prevalent and fatal. Drunkenness is one of the favorite vices of the primitive negro.

*Can Tropical Africa be Colonized?*—Surgeon-General Gordon <sup>22</sup><sub>July 23</sub> answers that, from his personal experience on the coast of Guinea, where 43 per cent. of white men died and a considerable number of others were invalided away, and this not from over-indulgence or other personal causes, and from the fact that the geological and climatic conditions are the same to-day as then, tropical Africa cannot be colonized by white men. He states, further, that European women were considered less capable of resisting climatic influences than men, which has been frequently noted in the East Indies and Southern China, and that no horses

were indigenous on the coast, and such as were imported speedily died.

Surgeon Kohlstock, <sup>61</sup><sub>Nov.1</sub> Director of Sanitary Affairs at the German headquarters near Saadani, says that no one should think of settling in East Africa who has phthisis in any stage, even the pretubercular, if he does not want to leave his bones in its soil. By a man of thoroughly sound physique the two diseases to be dreaded are dysentery and malarial fever. Hence the necessity for a very careful preliminary physical examination of the condition and antecedents of every person who aspires to colonize Africa, whether with a religious, mercantile, or military object, that only selected individuals make the venture into these regions.

The question of European acclimatization in the tropics is agitating the medical department of the Italian War Office. <sup>6</sup><sub>Apr.26</sub> General Ricotti doubts the wisdom of planting more than a naval station and garrison at Massowah, on the ground that the Italian is not prolific in Africa. In support of his position that European races do not thrive under higher temperatures than those of the latitudes they normally inhabit, he quotes the opinion of Wise, who declared that after thirty years' experience in India he had never met a person of European blood in the third generation. It is true the pension-list of the British Indian army exhibits <sup>239</sup><sub>Feb.</sub> a remarkable record of the longevity of Indian army medical officers, as the following table shows:—

YEARS OF RETIREMENT.	Assistant Surgeons.	Surgeons.	Surgeons-Major.	Surgeons-Gen. and Deputy Surgeons-Gen.
1825 to 1830 . . . . .	1	1		
1831 to 1840 . . . . .	4	3	1	
1841 to 1850 . . . . .	2	8	1	
1851 to 1860 . . . . .	2	9	10	2
1861 to 1870 . . . . .	1	8	35	18

The first series brings us face to face with centenarians, the others with quite a group at 90, a still larger at 80, and over thirty at 75 years of age; but for this comparatively small list of survivors there is a terrible record of noble lives cut short in the prime of youth, usefulness, and promise, and the recent death-roll of the Indian Medical Service is formidable. Great Britain commands India, but has not colonized it, and the same may be said

of the Dutch in the Asiatic Archipelago. The advocates of the attempt to colonize Italy's Abyssinian possessions contend that the adaptability of the whites to tropical latitudes is not uniform, the Southern Europeans taking more kindly to it than the Northerners, the Italian or Spaniard better than the French, the Provençal better than the Norman or Breton, the French better than the Hollander or Englishman. The blonde races are less fit for colonization of the tropics than the brown,—a fact of which Bordier was so convinced that he counseled the French government to send soldiers of the latter type to Algeria in preference to those of lighter hair and features. The belief, however, that color of hair is a provision of nature, people of cold climates having light hair and blonde features, and the reverse, is not invariably true, since the Esquimaux, inhabiting a colder climate than Scandinavia, have black hair. Racial character determines the color of the hair in different countries, and defies and counterbalances climatic influences. Fair hair has long been regarded as chiefly characteristic of the Aryan groups, but it is also met with among Asiatic Semites, and is very common among the Kabyles. The process of the blending of populations is tending to diminish the number of fair-haired people, and Beddoe,<sup>2</sup><sub>May 17</sub> who has been studying the question of the extinction of fair hair among the men and women of the British Isles, finds another reason for it in the fact that the xanthous temperament is less able than the melanotic to withstand the insanitary conditions existing in the crowded populations of our great cities.

An indirect way of acquiring a permanent foothold in Abyssinia, suggested for the Italians, is for their colonists to avoid the very hot littoral of the Red Sea, and seek the temperature in which they can live and thrive in the warm, temperate inland valleys or cooler hill-country. As Java has its Prianga, the Madras Presidency its Neilgherries, and Mexico its Anahuac, so Italian Abyssinia has its Asmara. Constrained to live at Massowah or other sea-board localities, the Italian colonist would, doubtless, disappear in the third generation, but on the Tigrine table-land there is no reason why he should not be acclimatized. The danger to settlers is not alone from the heat, but from heat *plus* telluric exhalations: the soil, not the sky alone, is to be feared. Crews remain healthy in equatorial latitudes so long as they re-

main on the high seas ; illness supervenes when they come within the influence of the land and the breezes blowing from it. The colonist is free from ailment until he begins to cultivate, and this period of *défrichement*, or clearing of the land, constitutes the real peril to the European settler.

Stokvis, <sup>31</sup><sub>AUG. 28</sub> of Amsterdam, at the Tenth International Medical Congress at Berlin, claimed that the experience of the Holland government in the Sunda Islands, and that of Great Britain and of the United States of America, established the power of vital resistance of Europeans to the morbid influences of tropical countries, to wit, temperature and infectious diseases. The centres controlling temperature are adapted in European constitutions to variable temperatures, which enables them to withstand the nocturnal lowering of the thermometer better than the natives, and, in fact, both in America and Asia more natives than foreigners die of pulmonary affections. Twice as many Europeans as natives die of hepatic diseases, which would seem to indicate the better adaptation of the native to the climatic conditions of the torrid zone ; but this explanation is open to discussion when it is recollected that the natives do not drink alcoholic liquors. He concludes that race plays only a secondary rôle in acclimatization, and that the European can become a resident of hot countries if he effects the transformation slowly and after a proper period of transition. It has been asserted that the mortality of Europeans was ten times that of natives, and statistics up to 1860 seemed to confirm this, but the statistics of the last ten years indicate the opposite. Up to 1860 the mortality of Europeans in the Dutch colonies was 168 per 1000 ; from 1860 to 1878 it was no more than 60 per 1000 ; and from 1879 to 1889, only 30 per 1000, or six times less than thirty years ago. The same is true of the English colonies. In the armies, among an equal number of Europeans and natives, the mortality of the native soldiers is now greater than that of the European.

At Jamaica, in the beginning of the century, the mortality of the whites was 121 per 1000, that of the negroes 30 per 1000 ; now, that of the negroes is somewhat greater than that of the whites. The mortality of the negro troops enlisted among the emancipated slaves during the American civil war, 1863 to 1865, was so great that their officers objected to having any more of

them ; from 1866 to 1881 the death-rate of the negro soldiers was somewhat greater than that of the whites ; but since then the mortality of the two races in the American army is the same. Hence, argues Stokvis, race has but a feeble influence in the struggle for existence ; for, although 168 soldiers per 1000 were formerly victims of climatic conditions, the diminished mortality to-day proves that not race, but external conditions, have changed. The practical hygiene of modern times deserves the credit for protecting the health of European soldiers under the tropics and reducing the mortality, as at Jamaica to 22 per 1000 ; at Curacoa to 18 ; at Java, which has the most insalubrious reputation, to 31. The military mortality in Hungary is 33, in Spain 31, in Prussia 22,—whether in the temperate climates of healthy regions or the unhealthy ones in the tropics. The fatal influence of hot climates is, then, only a myth. Every nation seeking to colonize should send only robust individuals, and subject them to a rigorous hygiene. Through precautions of this kind the most diverse nations, Spaniards, French, English, Hollanders, have been able to colonize the Great and Little Antilles,—an assertion, however, with which General Ricotti and his English authorities do not agree.

*The Antiquity of Man.*—Rudler,<sup>6</sup><sub>Sept. 13</sub> in his address before the Section of Anthropology at the meeting of the British Association, observed that, while it is generally accepted that man existed both on the Continent of Europe and in the British Islands during the quaternary period, contemporary with the mammoth, the hairy rhinoceros, and other now extinct animals, it is not proven that he existed in the far earlier tertiary times, as has been inferred from the presumed discovery of parts of the human skeleton, the existence of animal bones said to have been cut and worked by the hand of man, and the finding of flints thought to be artificially fashioned. As none of the vertebrate land animals of the eocene has survived, and but one of the pliocene (the hippopotamus) remains, the chances that man, as at present constituted, should also be a survivor are very remote and against the species *Homo sapiens* having existed in miocene times almost incalculable.

He also declared that it is no longer generally admitted that the cradle of our Aryan progenitors was in the highlands of Central Asia, the Germans contending that the primitive Aryans were the blue-eyed, dolichocephalic race which the Scandinavians and North



Germans typify, and the French, that the dark-haired, trachycephalic race of Gauls, now well represented in the Auvergne, is the primitive Aryan. Broca,<sup>14</sup><sub>Jan. 7, '91</sub> declares that these broad-headed people of Central France are the almost unmixed descendants of the Arveni, one of the most powerful tribes of the Gauls or Celts of the time of Cæsar.

De Quatrefages,<sup>208</sup><sub>Aug. 23</sub> in a closing lecture on the origin of man in his course on Anthropology at the Musée d'Histoire Naturelle, says that while Darwin and his adherents attribute to selection the power not only of having fashioned the body of man from an ape, a catarrhine with or without a tail, as his immediate ancestor, but of having given birth to all his intellectual and moral faculties, Russel Wallace, whose theory is the subject of his final discourse, derives the human body from that of an animal, but attributes these faculties to a divine selection, and Mivart believes the soul to be the result of a special and direct creation.

According to de Quatrefages,<sup>67</sup><sub>Apr. 30</sub> the human races are constant varieties of a single species, unique in genus, family, order, class, branch; and the distance between man and the animal is so great by reason of his two faculties of religiousness and morality that he constitutes—as stated by Géoffroi de Saint-Hilaire—a kingdom by himself, the universe thus comprising a sidereal, mineral, vegetable, animal, and human kingdom. He traces all the known human races to one original source, born in Northern Asia beyond the quaternary epoch. These human races, like those of the domestic animals, are numerous. Darwin recognized 150 of pigeons; the number of canine races may be carried to 220, and 172 distinct human races in the present state of science can be discriminated. The morphological types of these races are referable, excluding the mixed types, to a certain number of general types; and these general types are derivable from 3 initial types, which are in turn reducible to 1 unique primordial type, which disappears in the past.

Wallace,<sup>208</sup><sub>Aug. 23</sub> calls attention to the anatomical identity and the extreme functional irregularity of certain organs in the savage and the civilized man. The perfection of structure of the hand and the larynx of the savage is useless for his actual needs; so that it seems that the faculties latent in them from the beginning were designed in advance to meet the requirements of man's civilization and future progress. He makes a similar statement regarding the

brain, and, taking the capacity of the cranium to represent the development of the brain, he compares the civilized man with savages and anthropomorphous apes. While recognizing the quality of the cerebral substance as an element of superiority or inferiority, he regards the quantity of this substance as the most important factor of intellectual and moral power, basing his opinion, in part, on the exceptional diameter of the brains of Napoleon, Cuvier, O'Connell (Webster), and on the idiocy of individuals whose crania measure less than 864 cubic centimetres (52 cubic inches), the capacity of the orang-outang's skull averaging 457 cubic centimetres (28 cubic inches) and of the gorilla's 554 cubic centimetres (34 cubic inches). The measurements of Morton and Davis, however, show that the cranial dimensions of the most inferior races sometimes surpass those of the most civilized, Esquimaux skulls being known of a capacity of 1849 cubic centimetres (113 cubic inches), and averaging 1489 cubic centimetres (91 cubic inches), or but little less than the average contents of the Teutonic cranium, 1538 cubic centimetres (94 cubic inches).

Galton and Le Bon<sup>2</sup><sub>Mar. 22</sub> show that the volume of the head cannot be inferred from individual measurement, and that only approximately-accurate results can be obtained when a series or group of crania is dealt with. There is evidence that the brain goes on increasing in weight until a late period of life, not reaching its maximum until about the 40th year, and consequently the cranium must adapt itself to its growth. The increase of the diameters and circumference of the cranium is appreciable by actual measurement, according to Quetelet, up to the 20th year; after that it is inappreciable. Le Bon has been able, from the examination of the registers of a hatter, to ascertain the sizes of the heads for hats of a large number of persons in France in various social positions, and to demonstrate the correspondence between intellectual development and the size of the head. Classified by occupation, he found their relative position with respect to size of head to be, beginning with the largest: (1) men of science and letters; (2) merchants; (3) nobles of ancient family; (4) domestic servants; (5) peasants, showing a very evident direct hand correspondence between the cranial dimensions on the one and intellectual activity on the other.

Filhol<sup>860</sup><sub>Mar. 20</sub> asserts that the ideas must be abandoned absolutely

which were based upon the probable resemblance existing between the fossil *dryopithecus* and man, entitling the former to be considered the intermediary between the latter and the apes. Milne-Edwards's opinion that the *dryopithecus* was rather quadruped than biped has been confirmed by later developments. The inferior maxillary found in the strata of the upper portion of the middle tertiary of Saint-Gaudens (Haute-Garonne) and sent by Fontan to Lartet, who announced the discovery of the anthropomorphous fossil to the Académie des Sciences of Paris in 1856, and gave it the generic title of *dryopithecus* (δρῦς, tree, oak; πιθηκος, ape), perpetuating the name of its discoverer in its specific designation, *Fontani*, induced palæontologists to believe that this was the missing link between man and beast; but the finding of a second and more complete lower jaw-bone of the same animal by M. F. Regnault, of Toulouse, who, in the course of a visit to Saint-Gaudens, came across it in the possession of a villager ignorant of its zoölogical value, has disappointed their preconceived ideas. Gaudry,<sup>1059</sup><sub>Feb. 24</sub> to whom the fossil was sent for examination, pointed out (1) that elongation of the inferior maxillary of the *dryopithecus*, which necessarily coincided with that of the superior maxillary, and consequently of the face, made the latter as protuberant as that of the gorilla, more so than that of the orang-outang and the chimpanzee, and much more than that of the Hottentot Venus; and (2) that the space left for the tongue was so contracted that the tongue was narrow and the faculty of speech could not, therefore, have existed. The figures on page 28 show that the existing anthropomorphous apes are nearer to man than the *dryopithecus*.

Regnault, in the course of his excavations among the Pyrénées, discovered in the cave of Malarnaud, near Montseron (Ariège) a human lower jaw-bone among fossil remains of the *Rhinoceros*, *Elephas*, *Ursus spelæus*, *Felis spelæa*, *Hyæna spelæa*, etc., the very degraded character of which, Filhol declares, corresponds in type with that of the Naulette inferior maxillary found at a similar level in Belgium. The latter, says Topinard, has proportions not only not human, but more than ape-like, and the Malarnaud bone has the same characters,—even more exaggerated. The profile illustrations exhibit the colossal differences existing between the most degraded of the prehistoric men and the fossil ape of the middle miocene of the South of France. (See page K-29.)

*Deformation of Skulls.*—Verrier, <sup>164</sup><sub>Apr. 1</sub> referring to the deformities of the skulls of the inhabitants of the islands of Guadaloupe and Dominica, to whom Columbus gave the name of *Caribbees*, which deformations were even considered typical, and became known as the “Caribbean skull,” says, however, that Juan Ignacio de Armas declares that the indigenous populations of these islands

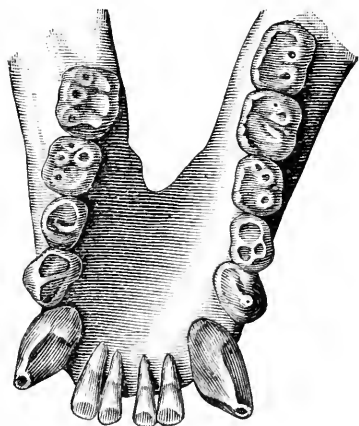


FIG. 1.

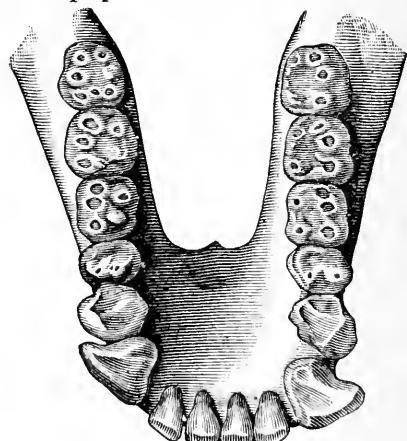


FIG. 2.

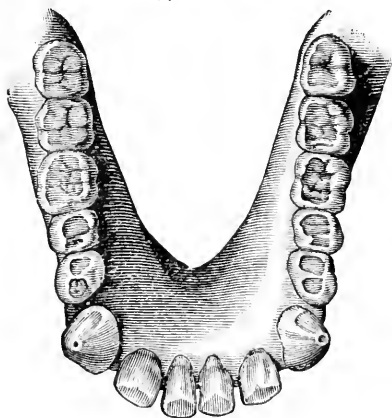


FIG. 3.

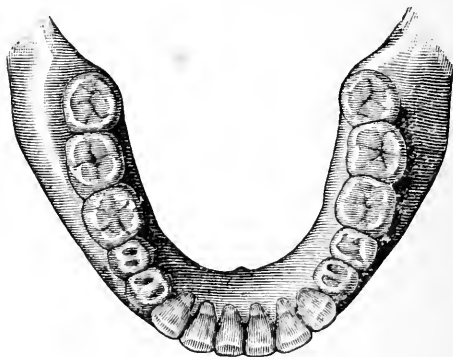


FIG. 4.

1, inferior maxillary of *Dryopithecus fontani*; 2, inferior maxillary of gorilla; 3, inferior maxillary of chimpanzee; 4, inferior maxillary of man.

(*La Tribune Médicale.*)

were so completely exterminated in the struggle with the Spanish invaders that, fifty years after the discovery of the Antilles, these were practically deserted, and that consequently the Indians found by the explorers of 1650 to 1700 were a new race from the American continent, differing from them in anthropological characters, as in language. Similarly, the anthropophagy, so common among the

people of the Atlantic Slope of America, has led to the confounding of the inhabitants of the continent and those of the Antilles under the name of Caribs. De Armas insists that no true Caribs were ever seen in Cuba, and that at no time did the habit of deforming the skull prevail there, which statement, Verrier argues, is not disproved by the number of deformed skulls found in Cuba, which may have belonged to the inhabitants of neighboring islands, temporarily there; and which, moreover, do not come within the category of Caribbean skulls, which are cuneiform in shape, and not flattened, as are those just exhumed, which probably belonged to the Aymaras of Peru or to the Chinooks. He describes the various kinds of deformation of the skull under the following heads:—

1. Accidental or unconscious, caused by vicious habits of sleeping or carrying, these presenting a curve of compensation opposite the flattening. 2. Also produced unconsciously by

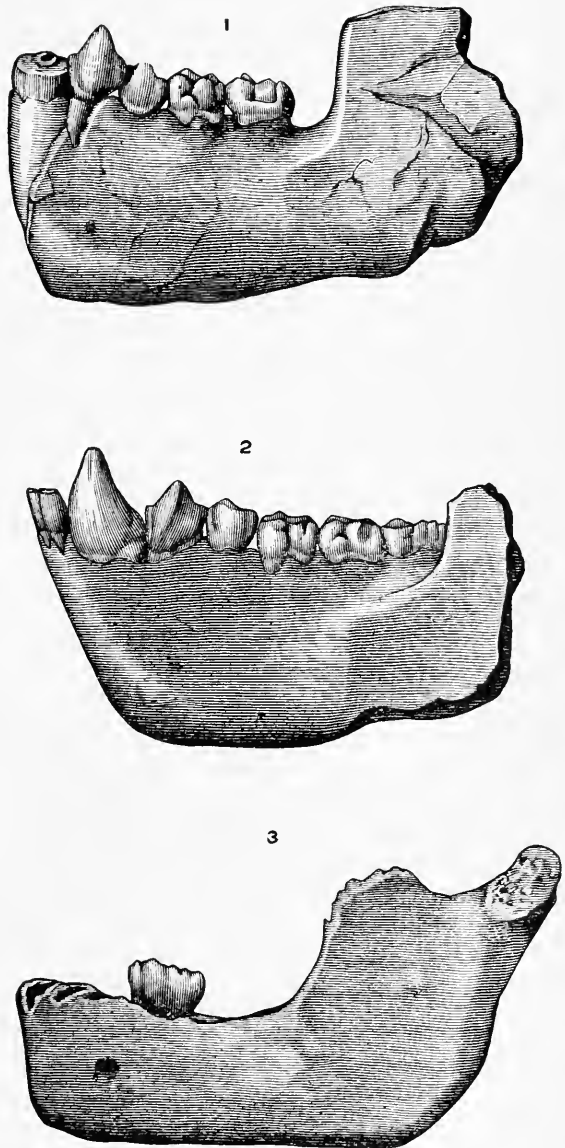
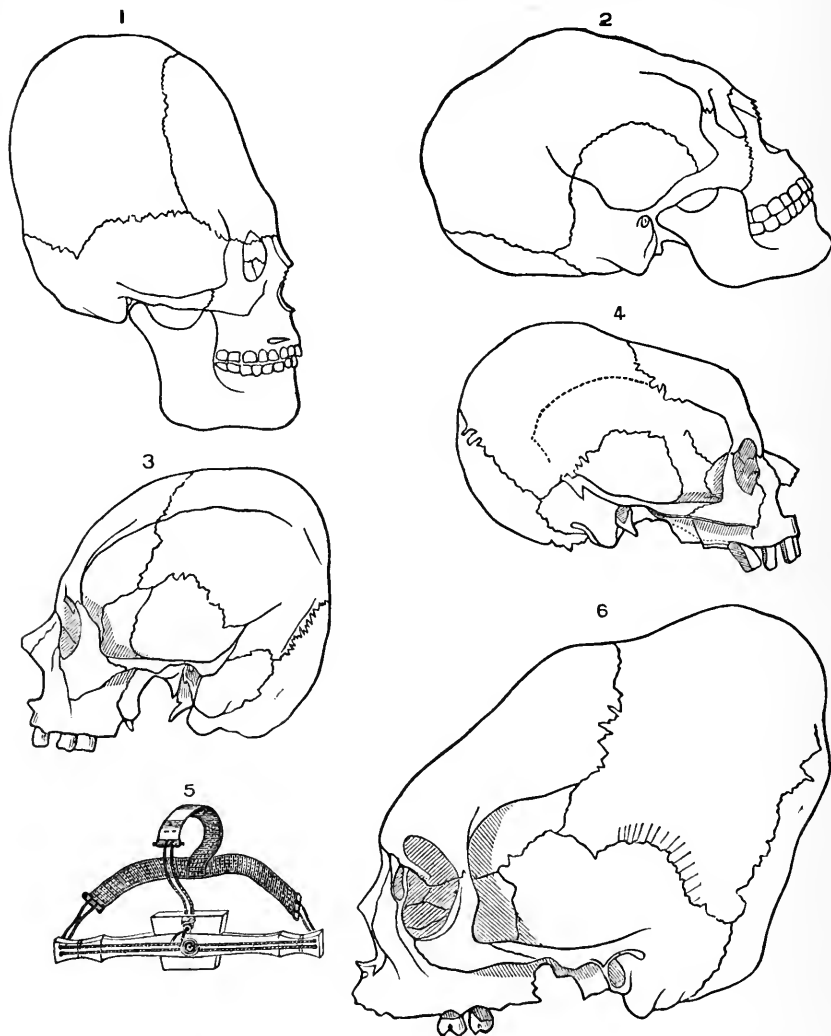


FIG. 5.

1, inferior maxillary of *Dryopithecus fontani* (Lartet); 2, inferior maxillary of *Dryopithecus fontani* (Regnault); 3, inferior maxillary of man, found in the cave of Malarnaud (Ariège).

(*La Tribune Médicale.*)

methods of dressing the hair, transmitted by heredity, and which consequently have become natural. 3. Veritable ethnic deformities, the result of inveterate habits and customs, and caused by



1, raised cuneiform skull; 2, depressed cuneiform skull; 3, skull flattened behind; 4, deformed skull from near Toulouse; 5, deformatory apparatus used in Borneo; 6, macrocephalic skull (Topinard).

(*La Tribune Médicale.*)

pressure and counter-pressure applied in infancy, and continued until the 6th or 7th year, or longer, by means of various special forms of apparatus, one of which, employed by the natives of Borneo, is here shown.

Verrier classifies these latter deformities in the following table:—

## VOLUNTARY ETHNIC DEFORMATIONS.

## 1. SIMPLE.

OCCIPITAL FLATTENING . . .	{	Turks, Maronites, Malays. Hawaiian Islanders.
FRONTAL FLATTENING . . .	{	In North of France, New Hebrides. Macrocephalics of Europe.

## 2. DOUBLE.

ANTERO-POSTERIOR FLAT- TENING (ASYMMETRICAL) .	{	Nahuacs and Toltecs . . . . .	} Cuneiform Skulls.
		Natchez and Incas . . . . .	
		Aucon and Vancouver Islanders . . . . .	
		True Caribs . . . . .	
		Philippine Islanders . . . . .	
	{	Natives of Borneo . . . . .	} Elongated Skulls.
		Flatheads, Little-Antilleans (False Caribs) .	

## 3. COMBINED.

FRONTO-OCCIPITAL, SYNCIPI- TO-PARIETAL FLATTENING (SYMMETRICAL) . . . . .	{	Aymara, Celebes, New Hebrides . . . . .	} Flattened Skulls.
		Santa Cruz, Aleuts, Sacrificios . . . . .	
	{	French from near Toulouse . . . . .	

*Vital Statistics.*—One of the topics proposed for discussion before Section XVIII, on Military Hygiene, at the Tenth International Medical Congress, at Berlin,—“Can the sick reports and sanitary statements of different armies be arranged according to a scheme, essentially uniform, for the purpose of obtaining statistics of scientific value for comparison of diseases, wounds, and deaths in times of peace and war?”—was made the subject of a paper by Surgeon Billings, of the army, <sup>Aug.</sup> who illustrated, by comparison of the recent statistical returns of nine military services, namely, those of the Austrian, Bavarian, Belgian, British, French, German, Italian, Netherland, and United States Armies, the extreme diversity in scope and composition of these returns. The data given in the reports of army medical officers respecting individuals taken sick or injured relate to: 1. Locality of the post. 2. Arm of the service (artillery, cavalry, infantry, etc.). 3. Rank (commissioned officers, non-commissioned officers, privates). 4. Occupation prior to enlistment. 5. Length of service. 6. Age of the individual. 7. Race or nationality (including color distinction). 8. The date of occurrence of disease or injury. 9. The nature of the disease or injury. 10. Complications and *sequelæ* of the disease or injury. 11. Results, including length of time of treatment required: (*a*) returned to duty; (*b*) transferred; (*c*) discharged; (*d*) invalided; (*e*) died; (*f*) otherwise disposed of.

Besides these, to permit of comparisons and calculations of percentages, there is also needed information as to the mean

strength of the command during the period under consideration, since the most important data and their combinations for local military administration are those which show the actual effective strength of the command and the causes of its diminution by sickness. The special value of military medical statistics for scientific purposes lies in the sick-rates, for these are our chief sources of information with regard to the number of cases of certain diseases or groups of diseases occurring in a given number of selected adult males, of specified age, nationality, race, and occupation in a given time, under different conditions of environment, climate, season, locality, and exposure. General or gross morbidity rates for armies are not valuable for comparison unless they include substantially the same classes of facts. The most important individual forms of disease, thus reported in more or less detail, are *small-pox*, the statistics of which, indicating the completeness of vaccinal protection, is a test of the administrative efficiency of the medical department and a demonstration of its importance in civil life; *typhoid fever*, *diarrhœa*, and *dysentery*, which form the chief indication of the character of the water-supply; *malarial fevers*, which are interesting in their relations to locality and geographical pathology; *venereal diseases*, which furnish data from which to judge the merits of the various schemes proposed for their eradication in civil life; *pulmonary phthisis*, *pneumonia*, *acute bronchitis*, *tonsillitis*, which are the measures of defective and impure air-supply; *scurvy*, *alcoholism*, *diabetes*, *rheumatism*, which denote defective assimilation from improper diet, imprudent indulgence or exposure; *malignant tumors*, *mental disorders*, and *suicides*, which, as occurring in different races, etc., after periods of years become of special international import. The necessity for grouping the individual cases of disease and death in army experience upon some general nosological system of classification, <sup>Aug. 16</sup> and the fact that there is no uniform agreement among the different services as to medical nomenclature, even of the causes of death, constitute the greatest difficulty experienced by military statisticians. Any great departure from the existing system in any country, rendering impossible a comparison with its heretofore published mortality statistics, is not desirable; and yet the fact that no system of nosology in present use is satisfactory would require a change in the form of statistics of every country and would also affect the forms in use in civil life. Hence, in view of



the impossibility of any general, complete, or stable system of nosological grouping, it may be well to consider separately the forms of disease which are of the most frequent occurrence, and which cause the greatest amount of disability and loss of life in armies, without regard to the group under which each may be classed. Such diseases would be cholera, yellow fever, plague, typhus, relapsing fever, cerebro-spinal fever, diphtheria, tetanus, and specific influenza, leaving the following recognized groups of what are known as *general diseases*: (1) *acute contagious fevers*, measles, scarlet fever, r  theln; (2) *septic diseases*, due to pyogenic bacteria or their products; (3) *tubercular diseases*; (4) *animal parasitic diseases*; (5) *zo  genous diseases*, glanders, anthrax; (6) *neoplasms*; (7) debility and other unknown or vague causes, and all the readily classifiable *local diseases* and injuries and casualties. Age, race, length of service, and duration are all important factors without which it is impossible to make comparisons with corresponding data of persons in civil life or in other occupations.

Billings's plan for collecting military statistics is for each medical officer of a post to prepare data with regard to each case of disease or injury coming under his ken, and to leave the work of compilation and tabulation to be done at the central office, where the data of the several cases are transcribed from the original sheets in which they were recorded, upon special cards or slips, permitting any required combinations of facts,—for statistical purposes.

Eaton, <sup>26</sup><sub>Sept.</sub> commenting on the *value of vital statistics*, refers to the general belief among non-medical men that records of births, deaths, and marriages are not of excessive importance, but chiefly a source of curious information to a few, and says that even the local authorities, whose duty it is to collect such facts, believe that the statistical reports of the medical officers are overdone. In some districts no record is made of marriages, nor of the proportion of legitimate to illegitimate births. Even medical men are frequently indifferent about the completeness of the information supplied by them. William Farr may be claimed to be the father of modern statistics, since we are indebted to him for the system of vital statistical reports now becoming common.

*Vital Statistics of the School Population.*—At the instance of a committee <sup>2</sup><sub>June 21</sub> appointed at Leeds by the Section of Psychology,

the council of the British Medical Association presented a memorial to the London School Board, asking that scientific inquiry be instituted among the schools. As further indication of the growth of public opinion that the classification of children for educational training, according to development and brain-power, is a recognized necessity, are the regulations of the new education code and the formation of a committee to make provision for feeble children. A scientific knowledge of the conditions of development and brain-power among children is necessary to know their tendencies and capabilities.

*Trades-Union Vital Statistics.*—Tillett <sup>6</sup><sub>Sept. 13</sub> recently stated that workmen worked too long and too hard, which was attested by the fact that the average age at which they died was between 29 and 30 years, whereas the well-to-do classes lived, on the average, to be 55 and 60 years of age. The fallacy of this measure of the relative longevity of those who work with their hands and with their brains is due to the derivation of the mean age at death of the working-classes from the ages of deceased members of certain trades-unions or friendly societies, which, consisting mainly of young men, the mean age of these deceased members is bound to be low; while, on the other hand, the well-to-do classes (their employers) consist largely of persons well past middle life, whose mean age at death is therefore comparatively high. Farr, over fifty years ago, pointed out some of the absurdities of drawing inferences of health and longevity from the mean age at death by showing that the mean age at death of cornets and ensigns was less than half the mean age of general officers, and also that curates died much younger than bishops; and hence it might be fallaciously argued that ensigns and curates were more unhealthy than generals and bishops. The true rate of mortality among the laboring classes is undoubtedly higher than that among the middle and upper classes; but the mean ages at death give no indication of the relative mortality of the different classes.

*The Census of the United States.*—The important statistical event of the year 1890 was the census of the United States, as that for 1891 will be the census of Great Britain. The population of the United States on June 1, 1890, as ascertained by the Federal census, was officially announced on October 31st to be 62,480,540, this, however, being exclusive of the whites resident

in the Indian Territory, of the Indians on the various reservations, and of the inhabitants of the Territory of Alaska. The increase of population over that of 1880 has been 12,324,757, or a percentage of increase, during the ten years, of 24.57, as against an increase of 11,597,412, or 30.08 per centum, during the previous decennium, 1870-80. The following table shows the population of the several States grouped, as is now customary, according to the census enumerations of the years 1870, 1880, and 1890:—

POPULATION.			
	1890.	1880.	1870.
The United States,	62,480,540	50,155,783	38,558,371
<i>North Atlantic Division.</i>			
Maine, . . .	680,261	648,936	626,915
New Hampshire, . .	375,827	346,991	318,800
Vermont, . . .	332,205	332,286	330,551
Massachusetts, . .	2,233,407	1,783,085	1,457,351
Rhode Island, . .	345,343	276,531	217,353
Connecticut, . .	745,861	622,700	537,454
New York, . . .	5,981,934	5,082,871	4,382,759
New Jersey, . .	1,441,017	1,131,116	906,096
Pennsylvania, . .	5,248,574	4,282,891	3,521,951
Totals, . . .	17,364,429	14,507,407	12,298,730
<i>South Atlantic Division.</i>			
Delaware, . . .	167,871	146,608	125,015
Maryland, . . .	1,040,431	934,943	780,894
District of Columbia,	229,796	177,624	131,700
Virginia, . . .	1,648,911	1,512,565	1,225,163
West Virginia, . .	760,448	618,457	442,014
North Carolina, . .	1,617,340	1,399,750	1,071,361
South Carolina, . .	1,147,161	995,577	705,606
Georgia, . . .	1,834,366	1,542,180	1,184,109
Florida, . . .	390,435	269,493	187,748
Totals, . . .	8,836,759	7,597,197	5,853,610
<i>Northern Central Division.</i>			
Ohio, . . .	3,666,719	3,198,062	2,665,260
Indiana, . . .	2,189,030	1,978,301	1,680,637
Illinois, . . .	3,818,536	3,077,871	2,539,891
Michigan, . . .	2,089,792	1,636,937	1,184,059
Wisconsin, . . .	1,683,697	1,315,497	1,054,670
Minnesota, . . .	1,300,017	780,773	439,706
Iowa, . . .	1,906,729	1,624,615	1,194,020
Missouri, . . .	2,677,080	2,168,380	1,721,295
North Dakota, . .	182,425	36,909	{ 14,181
South Dakota, . .	327,848	98,268	
Nebraska, . . .	1,056,793	452,402	122,993
Kansas, . . .	1,423,485	996,096	364,399
Totals, . . .	22,322,151	17,364,111	12,981,111

*Southern Central Division.*

Kentucky, . . .	1,855,436	1,648,690	1,321,011
Tennessee, . . .	1,763,723	1,542,359	1,258,520
Alabama, . . .	1,508,073	1,262,505	996,992
Mississippi, . . .	1,284,887	1,131,597	827,922
Louisiana, . . .	1,116,828	939,946	726,915
Texas, . . .	2,232,220	1,591,749	818,579
Indian Territory, . . .	—	—	—
Oklahoma, . . .	61,701	—	—
Arkansas, . . .	1,125,385	802,525	484,471
Totals, . . .	10,948,253	8,919,371	6,434,410

*Western Division.*

Montana, . . .	131,769	39,159	20,595
Wyoming, . . .	60,589	20,789	9,118
Colorado, . . .	410,975	194,327	39,864
New Mexico, . . .	144,862	119,565	91,874
Arizona, . . .	59,691	40,440	9,658
Utah, . . .	206,498	143,963	86,786
Nevada, . . .	44,327	62,266	42,491
Idaho, . . .	84,229	32,610	14,999
Washington, . . .	349,516	75,116	23,955
Oregon, . . .	312,490	174,768	90,923
California, . . .	1,204,002	864,694	560,247
Totals, . . .	3,008,948	1,767,697	990,510

The group of Western (Pacific) States shows the highest percentage of increase, 70.22; the Northern Central Division, 28.88; the Southern Central, 23.19; the North Atlantic, 19.66, and the South Atlantic only 16.32. The State of North Dakota has increased in ten years 394.26 per centum; the State of Washington, 365.30; several others in the West over 200 per centum, while Maine has had an increase of only  $1\frac{3}{4}$  per centum and Vermont has actually retrograded. The District of Columbia has grown 41.20 per centum and Utah 43.41. During the ten years 5,246,613 immigrants have been added to the population. There is a large increase of the urban population, more than half the people of the whole country being congregated within the cities. The contention on the part of the cities of New York, Brooklyn, St. Paul, and others as to errors in the enumeration of their respective populations, unless satisfactorily arranged, will destroy the scientific value of any statistical deductions derived from them, and must necessarily defer any calculations based on them.

# HISTOLOGY AND MICROSCOPICAL TECHNOLOGY.

By FRANK W. BROWN, M.D.,

DETROIT.

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## HISTOLOGY.

Meyer<sup>1167</sup><sub>No.48</sub> denies the conclusion of Schwarz that living protoplasm has an alkaline reaction, the alkalinity being due to the methods employed in the experiments.

B. Hofer<sup>338</sup><sub>v.24, '89</sub> summarizes his studies on the influence of the nucleus on protoplasm thus: The nucleus has direct influence on (a) the movement of protoplasm, in which the capacity for movement dwells, though developed only through relation with the nucleus; (b) digestion, in so far as secretion of digestive juices is possible only when nucleus and protoplasm work together. The nucleus has no direct effect on the respiration of protoplasm, nor in the function of the contractile vacuole.

M. E. Baillou,<sup>916</sup><sub>No.90</sub> in studying the nuclear modifications which affect the nucleolus, states that it is pushed to one side and protrudes a process; above the nucleus is a rod which partly envelops it, but which arises from an internal nucleolus. He thinks that the chromatic filament may be developed from the plasma of the nucleolus through absorption of chromatin, whilst the nucleolar filament may be formed by a condensation of the hyalo-plasmic frame-work, of which the nucleolus is apparently the centre.

W. Flemming,<sup>29</sup><sub>v.35, II.3</sub> in studying the division of pigment cells and capillary-wall cells, concludes that a cell-body (like the budding of Protista and the division of leucocytes) may be divided by forces which need not in any way correspond with those which are active in the division of the nucleus.

James R. Whitwell<sup>47</sup><sub>Jan.</sub> has made some interesting studies on nuclear vacuolation in nerve-cells of the cortex cerebri. Though in certain lower animals, notably the jorpedo, large, vacuolated cells are normally found in the cortex, such does not seem to be the case with man. Whitwell has found them, however, in certain

pathological conditions, particularly in dementia resulting from epilepsy of prolonged duration. These changes are seen more marked in the large, pyramidal cells of the deeper layers of the fronto-parietal region.

The earliest change which occurs in a nucleus about to become vacuolated is an alteration in its contour; from its normal angular form it becomes swollen, rounded, or pyriform, and coincident with the change in shape occurs an altered reaction to staining agents; instead of being deeply stained, as in the normal state, it becomes relatively lightly stained, the degree varying considerably.

Instead, however, of the whole nucleus swelling up like this, the nucleolus alone may show these changes first, while the rest of the nucleus is only slightly altered, and perhaps bulged to one side, and this method of commencement is perhaps, on the whole, the more common. Or, again, the condition may go on side by side in the nucleus and nucleolus at the same time.

Pigmentary degeneration may accompany the vacuolation, though such is not always the case. Whitwell does not think that the vacuolation is due to post-mortem causes, nor to osmotic changes produced by reagents; nor does he think it an instance of so called "dropsical" degeneration.

W. Osler,<sup>59</sup><sub>No. 35, '99</sub> discussing the doctrine of phagocytosis, concludes as follows: That while phagocytosis is, in the animal kingdom, a wide-spread and important physiological process and plays an important part in many pathological conditions, the question whether leucocytes possess an actual militant function against micro-organisms of disease cannot at present be answered.

Rabl-Rückhard,<sup>75</sup><sub>Apt. 1</sub> reasoning from a theoretical stand-point, maintains that the ganglion-cells possess amœboid motion. The character of the theory is eminently materialistic.

Fr. Maas,<sup>29</sup><sub>B. 44</sub> after an exhaustive review of the various theories regarding the deposits of pigment in the human body, asks and thus answers the following questions (he particularly examined the pigment found in the kidneys, liver, heart, supra-renal capsules, seminal vesicles, epididymis, and testicles): 1. Is the pigmentation dependent on age, and when does it appear? Kidney—pigment is found in the infant, but increases with age; liver—the same, although pigmentation is not so pronounced at an early age as in the kidney; heart—pigmentation does not begin until about

the tenth year, and then increases with age; supra-renal capsules—pigmentation not marked until about the twentieth year, and then increases with age; seminal vesicles—pigmentation begins between the twentieth and twenty-fifth year, then increases with age; epididymis—pigmentation begins between the twenty-fourth and thirtieth years, but does not always increase with age; testicle—pigmentation begins at about the twentieth year, and increases with age.

2. Should pigmentation be considered as physiological or pathological? Pigmentation is a physiological process which can be hastened or retarded through pathological influences. 3. Is the pigment made where found, or is it produced by the blood or lymph, or, perhaps, by other cellular elements? It is made by the pigment cells, which retain it. 4. Are the pigments derived from the blood or fat? The blood-origin theory is seemingly confirmed in the liver and testicle; the fat-origin theory only in the heart. 5. Are the various pigments identical or not? They are not, but are nearly related.

The President of the New York Microscopical Society<sup>1168</sup><sub>89</sub> stated that a specimen of gamboge rubbed up in water which showed Brownian movement and which he mounted in August, 1874, had lately ceased, caused by a leakage in the cell. He thought the subject of interest, as fourteen years was probably the longest period during which the phenomenon had been under observation. Pierre A. Fish,<sup>1169</sup><sub>v.12</sub> studying the cilia of the endymal epithelium, arrived at this summary: The investigation demonstrated the existence of ciliated epithelium not only in the young but also in the adult cat. If psychical phenomena are compatible with enlarged cilia, there seems no reason why, from a morphological stand-point, they should not exist in the human adult. If they exist they can be demonstrated only in a fresh and quickly-prepared brain.

P. Flechsig,<sup>182</sup><sub>Nov.27</sub> employing a new staining method (see "Technology") for nerve-cells and fibres, finds the following: 1. The connection between the axis-cylinder process of the cells with surrounding fibrils in cerebral cortex could not be demonstrated with certainty, the process connecting only with an axis-cylinder. 2. The process, at first non-medullated, divides dichotomously at nearly right angles. 3. In the occipital lobes trichotomous divisions were more common. 4. In the cells of the central fissure

many processes did not divide; at least, not in the immediate neighborhood of the cell.

Haycraft <sup>2</sup><sub>Aug. 16</sub> teased out a few muscle-fibres and pressed them on a film of collodion not completely dry, and then removed them, leaving molds in the film. These showed all the microscopical features of the fibres to the minutest details. From his study of these walls he believes that the cross-stripping of muscle is not due to the internal structure of the fibre, but to its form, in that it is a varicose thread of tissue. He views the striped fibres as originally unstriped, which, instead of shortening and thickening as a whole, segments into minute masses, each shortening and thickening at a much quicker rate. Also that the movements of the stripes which occur during contraction are but optical appearances, due to the change of form of the varicose fibre during contraction.

Susan Phelps Gage, <sup>1169</sup><sub>v. 12</sub> investigating the intra-muscular endings of fibres in the skeletal muscles of certain animals, summarizes as follows: 1. In cold-blooded vertebrates many fibres extend from tendon to tendon of the longest muscle. A few tapering intra-muscular ends were found in the frog and necturus. 2. In the longer muscles of birds and mammals most of the fibres end intra-muscularly, either by simple tapering or branched ends of varying form. The latter endings would probably be found in the long muscles of adult warm-blooded animals. 3. Though further investigation is demanded as regards the development of the ends, it seems to be that at first there are no branches, but that they arise through an unequal growth of the fibrils at the tip of a fibre. 4. The branching ends appear to have close connection with other fibres, in some cases anastomosis occurring. This circumstance must have a bearing upon the question of the transmission of a nervous impulse from one fibre to another.

S. H. Gage <sup>260</sup><sub>Aug.</sub> compared the throat-muscle of a calf which had been killed by the Kemmler-chair electrodes with that from one which had been butchered in the ordinary way, and was unable to find any constant differences. W. C. Krauss <sup>260</sup><sub>Aug.</sub> made an examination of the brain from the same animal, and found that the sections stained indifferently, and that the cells lacked the clearness of outline characteristic of normal tissues. No other abnormalities could be discovered.

*Elastic Fibres.*—A. Ewald <sup>54</sup><sub>Apr. 1</sub> digested the ligamentum nuchæ



of the ox by means of trypsin and pepsin, and during the process of disintegration noticed the following: 1. The fibres seemed to digest from the centre outward, so that it was possible to distinguish a cortical from an inner layer. 2. When the fibres were previously stained in a weak solution of osmic acid the digestion revealed the membrane inclosing the fibres which had been mentioned by Schwalbe. 3. That the peripheral differed much from the axial portion of the fibres. 4. That when the fibres were cooked and then digested it seemed that several different chemical substances could be differentiated. 5. That, with the exception of chromic acid, the various hardening media (alcohol, picric acid, etc.) seemed to increase the digestive powers of trypsin.

G. Pisenti and G. Viola,<sup>25 July 20</sup> in studying the hypophysis, come to the following conclusions: That the colloid substance formed within the follicles is not confined to them, but passes into cavities in the surrounding connective tissue. This is not, however, visible throughout the organ. These cavities are not lined with endothelium. The numerous thin blood-vessels also show the presence of colloid, in some of the smaller ones occupying the entire lumen. A connection could be seen between the follicles and the cavities, and in this way the colloid may enter the circulation. Whether the cavities were lymph-spaces or blood-vessels could not be determined, though the investigators think they are the former. They believe that it is not a ductless gland, as the follicles do not form a closed system, communicating as they do with the circulation. They therefore consider the colloid substance as a secretion having some function in the organism.

Based on histological and physiological analogy, confirmed by pathological processes, they affirm the homology of the hypophysis and the thyroid body.

*Elephants' Skin.*—Fred Smith,<sup>27 July</sup> after an exhaustive study of an elephant's skin, concludes with the following points of interest: 1. The long, finger-like papillæ on the tip of the trunk placed in connection with special nerve-endings, and no doubt conveying that exquisite sensibility which the animal is known to possess in this part. 2. The compound primary and secondary papillæ in the skin. 3. The absence of anything approaching glandular structure. 4. The canal system, which exists in all bristles, and in a modified degree in most hairs. 5. The arrangement of the horny

and sensitive laminae at the corners of the nail, and the presence of a blood-vessel in true horny tissue.

#### TECHNOLOGY.

Van Heurck <sup>260</sup><sub>June</sub> announces that Zeiss has succeeded in producing a  $\frac{1}{10}$ -inch "apochromatic" objective with an aperture of 1.63, and so constructed that under suitable conditions the whole of this aperture can be utilized. With it he has resolved the entire frustule of *Amphipleura pellucida* not merely into lines, but into pearls as distinct as he has ever seen on *Pleurosigma angulatum*. Three such objectives have been made at a cost of \$200 each, one of which is in the possession of Koch. The lenses of this objective are thus disposed <sup>400</sup><sub>Feb.</sub>: 1. Front lens (more than a hemisphere) of flint; index, 1.72. 2. Achromatic lens. 3. Crown-glass lens. 4. Achromatic lens. 5. Correcting lens (three glasses). Three of the lenses are in fluorite. Abbe considers that the difference between the indices of the cover and the immersion liquid notably favors the resolution. Van Heurck considers that the new objective forms a practical crowning of the long theoretical labors of Abbe, in that he has practically realized all that theory indicated.

C. P. Hart <sup>400</sup><sub>Aug.</sub> gives a description of a new, cheap, useful, and quickly-constructed adjustable microtome or microtome-microscope. He took a Bausch & Lomb microscope-stand and thus changed it: Having removed the substage, clips, objective adapter, and draw-tubes, a suitable razor-blade is fixed to the slide-carrier so that it will run parallel to the stage. The imbedded substance is carried down the main tube, which is fixed horizontally, until it presses against the knife, when it is fixed in position by means of the main draw-tube, the diaphragm of which is brought in contact with the distal end of the specimen. The knife is now moistened, and a revolving, cutting motion given it through the slide-carrier. The thickness of the sections is, of course, graduated by means of the micrometer-screw. Certainly a unique conception.

W. H. Howell <sup>218</sup><sub>No. 4</sub> divides the giant-cells of the marrow into two classes: (1) polykaryocytes, or multinucleated giant-cells found in developing bone, in pathological formations, or porous bodies kept in lymph-cavities; (2) ungakaryocytes, or large nucleated giant-cells found in the red marrow of the adult and in

the blood-forming organs of the embryo. The two forms do not seem to be related, and have a different origin.

J. Vosseler<sup>401</sup><sub>No. 6, '89</sub> speaks highly of Venice turpentine as a permanent mounting medium, as it has all the advantages of resinous media, and in some respects superior to them, and is much cheaper. He prepares it by mixing equal volumes of the crude balsam and 90-per-cent. alcohol, which is allowed to stand for two or three weeks. A clear, yellowish, sometimes greenish mixture is superimposed upon the impurities, and is ready for use. It may be thinned with xylol chloroform or other solvents as used with Canada balsam. The finer details of structure are better seen than when Canada balsam or dammar are used. A clarifying medium is not necessary. The only disadvantage is its slow drying qualities, but when dry it is harder and less brittle than balsam or dammar.

T. L. Webb,<sup>109</sup><sub>Oct., '99</sub> in view of the high price of gum-arabic (\$1.25 per pound), recommends the substitution of gum-dextrin (8 cents per pound). He finds that, when sufficient dextrin to make a thick syrup is dissolved in an aqueous solution of carbolic acid (1 to 40), it is superior to the time-honored gum and sugar, in that it freezes sufficiently to give firm support without becoming too hard, and that it keeps better, as well as being cheaper.

O. Beccari<sup>1170</sup><sub>No. 3</sub> recommends the substitution of cajuput-oil for clove-oil as a solvent for Canada balsam. He states that the specimen can be transferred from that mixture directly to dilute alcohol, which is not the case with clove-oil; also that objects so treated can be permanently stained with methyl-green and preserved in balsam.

F. L. James,<sup>109</sup><sub>Jan.</sub> through mistake, added a quantity of liquor potassæ to a thick solution of dammar. After some months he noticed that the mixture had separated into two zones, an upper, clear, gummy one, and a lower of a whitish color. This clear layer was tried with success as a mounting medium. It dried slowly but very finely. Used as a mounting medium upon a hot slide, no bubbles were formed, and the specimens, after a lapse of time, are still in good condition. He does not know the chemical nature of the solution.

F. L. James<sup>109</sup><sub>Feb.</sub> recommends the addition of a few crystals of naphthalin to specimens of urine for future examination. Although

the crystals are quite insoluble in water, they seem to prevent fermentation.

Wm. Stirling<sup>277</sup><sub>Jan.</sub> recommends the extension of the "dry cover-glass method" (that generally used for the demonstration of bacteria) for the demonstration of blood-corpuscles, leucocytes from lymph-glands, epithelium, bone-marrow, nerve-cells, blood-vessels, and spermatozoa. The aniline dyes should be used with this method.

M. L. Ranvier<sup>3</sup><sub>Nov.</sub> recommends this method of examining the tissues of warm-blooded animals at their normal temperature. The prepared object is protected by a rim of paraffine, and when fixed to the microscope the instrument is immersed in a jar of distilled water at a temperature of 36° to 39° C. (96.8° to 102.2° F.), which should rise about 1 centimetre above the stage. The microscope should be of simple construction, and an immersion lens should be employed, which should be previously heated in order to avoid blurring. The author, rather over-enthusiastically, remarks that by this method he has been able to make more studies in a month than in twenty years by the old arrangements.

P. Kronthal<sup>75</sup><sub>Jan. 15</sub> finds the following method very satisfactory for the demonstration of the nerve-cells in the anterior horns of the cord: A small piece about the size of a pin-head is placed between the cover-glass and slide and squeezed until a sufficiently thin layer is obtained. This is stained under the cover-glass with a 5-per-cent. aqueous solution of methy-blue, which occupies from one-half to one minute. The superfluous stain is taken up with blotting-paper and the cover is removed in such a manner as not to disturb the specimen any more than possible. This is then dried (which takes from five to ten minutes) and mounted in balsam. He claims that no artificial products are formed, as he thinks drying to be less harmful than hardening, macerating, or tearing. The method could presumably be employed with other tissues when it is desired to isolate cellular elements.

J. H. Thompson<sup>61</sup><sub>Nov. 8</sub> recommends the following method for preparing specimens of the eye: When first removed wash it in cold water, wrap it in a piece of paper and freeze by placing in a box of cracked ice and salt. Two sections are now to be cut off; the one should extend from the cornea to the equator of the eye, opening the anterior and vitreous chamber, but should avoid injuring

the lens; the other, made larger, should be cut from the opposite surface and should extend from the edge of the cornea to the posterior pole on a plane corresponding to the horizontal visual plane and parallel to the optic axis; the lower cut must be so even that when the eye rests upon a flat surface the scleral edge will be in contact all around, in order to prevent the escape of the vitreous and thus disturb the normal relations of the various structures. Carefully adjusted on a glass carrier it is suspended in Müller's fluid, later in alcohol. The subsequent treatment is by Reeve's paraffine method, which the author prefers to the celloidin process.

B. Solger<sup>401</sup><sub>No. 6, '89</sub> recommends, for the demonstrating of the sarcolemma of a frog's muscle, that it be placed for from three to five minutes in a cold, saturated solution of ammonium carbonate, then teased out and examined. The demonstration is more complete if the animal be previously kept for several weeks in captivity.

A. Oppel<sup>316</sup><sub>No. 5</sub> thus applies Golgi's method for demonstrating the ultimate bile-ducts of the liver: A piece of rabbits' liver is treated with the potassium-bichromate solution, which is rapidly strengthened from 2 to 5 per cent.; in about three weeks place in a  $\frac{3}{4}$ -per-cent. solution of silver nitrate. A few days' immersion seems to stain the ducts.

Burkhardt<sup>365</sup><sub>Dec. 14, '89</sub> gives the following method of staining amyloid tissue: Stain the sections in a moderately strong solution of gentian-violet in aniline water; decolorize in a solution of hydrochloric acid (1 to 10) for ten minutes; the amyloid portions of the tissue are then a dark purple, the other portions colorless; then wash in water and clear up in a solution of potassium acetate.

F. Sanfelice<sup>491</sup><sub>p. 21</sub> found that the acid or alkaline reaction of tissues may be recognized by staining with Böhmer's hæmatoxylin (alkaline), or with the author's iodized hæmatoxylin (acid). Two precautions must be observed: First, it is necessary that the normal reaction of the tissue must not be interfered with, hence reagents such as chromic acid and its salts, Müller's fluid, and Flemming's solution are unsuitable fixatives. The author used absolute alcohol for hardening and fixing, and also corrosive sublimate, the excess of which must always be carefully extracted with spirit. Second, that the hæmatoxylin solution must have only a feeble reaction. Among the instances of differential staining obtained by this method it is mentioned that the protoplasm masses in the

ovary and testicle of selachians are colored red when the whole of the tissue is treated with the alkaline solution, a fact which proves that the elements undergoing this form of necrobiosis acquire an acid reaction. Goblet-cells in the intestinal mucosa become colored blue, while the rest of the tissue remains red. Hence, the reaction of goblet-cells is alkaline, and this method might be usefully employed to ascertain the reaction of tissues or elements and their products.

*New Stain for the Central Nervous System.*—P. Flechsig<sup>182</sup><sub>Nov. 27, '99</sub> recommends this method for demonstrating the condition between ganglion-cells and nerve-fibres: Harden the specimen in a 2-per-cent. aqueous solution of chromate of potash; cut into sections not less than  $\frac{1}{20}$  minim and place in 96-per-cent. alcohol; stain in a solution of extract of red wood at a temperature of 35° C. (95° F.) for from three to eight days; then decolorize after Pal's method for logwood stain. The decolorizing must be complete, and is best attained thus: Each section is placed in 3 cubic centimetres of a  $\frac{1}{4}$ - to  $\frac{1}{5}$ -per-cent. solution of permanganate of potash, where it remains until the solution has lost its bluish color; then place in this decolorizing fluid: aq. dest., 200; acid, oxalic, 1; potassium sulphate, 1. When the decolorization is nearly complete return to the permanganate solution and again, if necessary, to the decolorizing fluid, etc., until the yellow color has entirely disappeared from the section. (The redwood stain is made after the following formula of Wilhelm Freiherr von Branca: Pure extract of Japanese redwood, 1, is dissolved in 10 alcohol, absolute, which is diluted with 900 aq. dest., and the resultant carefully dissolved by a saturated solution of equal parts of sulphate of soda and tartaric acid.) The specimen can now be dehydrated and mounted. He also gives directions for combining Golgi's sublimate stain with the above.

*Stain for Central Nervous System.*—Kultschitzki<sup>316</sup><sub>July, '99</sub> recommends the following stain: The tissue hardened in Müller's fluid (though that of Ehrlich is preferred) is imbedded in celloidin, sectioned and treated by a stain made as follows: Dissolve 1 gramme of hæmatoxylin in sufficient absolute alcohol to effect perfect solution; mix 20 cubic centimetres ( $5\frac{2}{3}$  drachms) of a saturated solution of boric acid with 80 cubic centimetres ( $2\frac{7}{10}$  ounces) of distilled water, and to the mixture add the solution of hæmatoxylin.

The liquid will at first be yellow, but changes to a dark red in the course of two or three weeks.

To use: Filter into a watch-glass, and then, by means of a glass rod dipped into glacial acetic acid, render the liquid distinctly acid. The sections may now be placed in it. After remaining for fifteen minutes the medullated fibres will have taken on a dark-violet or blue color, the remaining element being stained from a light-yellow to a reddish-yellow or orange color. This differentiation becomes more marked with the length of time that the sections remain in the stain; at the end of twenty-four hours a very perfect differentiation is secured, and thus any intermediate grade of staining may be obtained. If the best results are desired, the sections should now be removed into a saturated solution of lithium carbonate and left for twenty-four hours. After thorough washing in alcohol, clear and mount in balsam, or examine in glycerin.

E. Zettnow<sup>401</sup><sub>No. 8, '89</sub> finds that the orthochromatic power of eosin-silver plates, used in photomicrography, is due to the erythrosin or its silver combinations, and not to eosin. The erythrosin plates are extremely sensitive to yellow rays, and as long as this kind of light predominates the delineation is unsurpassable. Sharp negatives can be obtained with a mineral-oil lamplight and the ordinary low-power objectives, and this without a filter. With sunlight or with light containing many blue rays, they fail.

F. J. Paul,<sup>187</sup><sub>Jan.</sub> in making some studies on the relative permanency of microscopical specimens under the influence of different staining and mounting agents, many of the specimens having been preserved for twenty years, comes to the following conclusions: The old method of hardening cubes in a 1-per-cent. solution of chromic acid for three to four weeks, transferring to glycerin, sectioning, and then mounting in glycerin and fixing the cover-glass with a mixture of gold-size and Brunswick black shows no change in twenty years. No stains were employed with the method. As a mounting medium for stained tissues he prefers natural Canada balsam, as being far superior to glycerin, dammar (in particular) and balsam, combined with a solvent, as benzol, etc. Carmine is the most permanent of stains, not having faded in the worst specimens. When it is desired to photograph or draw the details of a specimen, he prefers Farrant's medium—also quite permanent as a preservative—to balsam, as specimens mounted in it are not

overcleared. The stains he employs in this case is hæmatoxylin and eosin. As a hardening fluid he prefers a 2-per-cent. solution of ammonium bichromate, sections from it taking the stain more readily.

L. Minor <sup>75</sup><sub>May 15</sub> finds that an electrical current passed through a specimen of spinal cord immersed or previously partly hardened in Müller's fluid very much accelerated the hardening process. The specimen which had been in contact with the positive pole was hardened through and through as if it had been in Müller's fluid for months. The color was a dark brown. That portion, on the contrary, which had been in contact with the negative pole was somewhat puffy, especially toward the centre, and was of a doughy consistency, and of a light-yellow color. In the experiments the specimens were exposed to the current for a period of four or five days. He states that the process did not seem to work harmfully on the specimens, as they took the various stains well and the microscopical structures were well defined.

Wiedemann <sup>75</sup><sub>Aug. 1</sub> comments on the experiments and points out that these effects of the electrical current were noticed as long ago as 1860, and depend upon the so-called electrical endosmosis.



## BACTERIOLOGY.

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AND

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BOSTON.

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### TUBERCULOSIS.

ALL works on tuberculosis, during the past year, have faded into insignificance before the announcements of Koch as they came to us from Berlin. Beginning with a short statement of the results he has obtained on animals, made to the International Medical Congress, at Berlin, in August, followed by a preliminary statement of the results of the clinical experiments upon animals and men, published in November, and finally completed by the statement of what the material used against tuberculosis is, which has been announced before this article goes to press, the whole forms one of the most interesting episodes in medicine of the present day.

The preliminary statement was to the effect that he had, by reason of his many experiments upon animals, and after many failures, obtained a material which prevented the further development of tuberculosis in the guinea-pig,—even going so far as the arrest and cure of a process already started. This was followed by carrying the experiments further and applying the material to man, the supply being furnished by Koch to various practitioners in different parts of the world for the sole purpose of testing its effects upon human beings from the clinician's point of view.

The method of preparing this material was kept secret for what seemed to be good and sufficient reason, and there has never been a basis for the slightest doubt that, when the proper time came, it would be told. It seems proper to speak of this in order to prevent the spreading of the accusation that has been made against him for keeping the remedy secret as long as he did; it would not have been done excepting for reasons over which he had no control.

As a matter of interest, some of the references as to where these statements of Koch's may be found are given. The preliminary announcements are, of course, in the "Transactions of the International Medical Congress" for 1890.

The first series of cases, as published in the numbers of the *Deutsche Medicinische Wochenschrift* and the *Berliner klinische Wochenschrift*, during the fall of 1890, have been collected and published in a series of small pamphlets called "Robert Koch's Heilmittel Gegen die Tuberculose."

The plate accompanying the cases, which are preceded by a short introduction by Koch himself, illustrates the idea thus far obtained in regard to the histological appearance as produced by the action of this material. Koch has suggested the name "parataloid" for it, and this seems the term proper to apply. The plate shows the condition of the bacilli scattered among the cells before treatment, and their appearance as collected together after treatment, by some action of the material itself. Just what this material is and what its action is, so far as our knowledge at present goes, it seems quite proper to state by an extract from an address given by the writer of this article.

This address was made before the announcement of the method of preparation of the material came to hand, and before the writer had any reasons, excepting those obtained from bacteriological work, for his supposition.

Before speaking of what the material is, it is quite necessary to emphasize carefully what it is not, and therefore it should be understood, in the first place, that it is distinctly not a vaccine. It bears not the slightest resemblance to one; and it is very easy to see why, when one recalls what a vaccine is. A vaccine requires for its effect and action something in the nature of vitality, presumably a micro-organism. There must be something present capable of self-reproduction. It must have some vitality, and the best example of a vaccine is that which we see employed every day as a preventive against small-pox. A vaccine has distinctly the power of self-reproduction. If a minute amount is introduced into an abraded part, a local reaction of a very marked degree is set up. This is the result from the action of a vaccine, and does not occur in our experiments with parataloid.

Again, it is distinctly not an attenuated virus. All of the



Bacilli before injection (Koch).



Bacilli after injection (Koch).

Deutsche Medicinische Wochenschrift



French methods of procedure against infectious disease, so far as completed research has been obtained, have been in the line of attenuated virus, which simply means that the specific agent in the prevention of any specific disease is deprived of a portion of its virulence by being subjected to artificial modifications of cultivation under varying conditions: by increasing, for example, the temperature in which it is developed, by a change in the amount of atmospheric pressure, or by a change in the supply of oxygen. In this way something of the properties of the organism may be altered, and the virus—for example, that of anthrax—loses its power to produce the full and violent forms of the disease in some such way as that suggested. The bacilli of anthrax, which, under ordinary conditions of cultivation, and in full possession of their virulence, will produce death in twenty-four hours in the lower animals, may be so changed in their power of producing the disease, and yet retaining their power of growth, that when introduced, even in large quantities, into an animal economy, they effect only partial or no disturbance. This is an illustration of an attenuated virus.

Another example is furnished by the methods of treating the spinal cord of animals, especially rabbits, dead of rabies. The cords of such animals contain the virus in its full intensity, and when subjected to certain conditions of drying they gradually lose their power to reproduce the disease, until, at the end of two weeks, they have no such power at all. During these two weeks the strength of the virus is gradually attenuated. We must, therefore, exclude any consideration of Koch's material as an attenuated virus, because absolutely none of the results which follow the injection of this material, either into man or into the lower animals, resembles anything which we can in the least ascribe to the action of an attenuated virus. We have no production of anything in the way of a modified form of tuberculosis, the production of the modified form of the disease being one of the great cardinal principles in the action of an attenuated virus. Neither is there any method of procedure necessary before using the material which could in the least ally it with those conditions used in the procuring of the attenuation of an ordinary virus. Therefore, having shown that Koch's material is neither an attenuated virus nor a vaccine, what else can it be?

And now we come to the knowledge gained in years past in bacteriological research, a consideration of which enables us to give without much hesitation what seems to be a fair explanation of what this material is; and, in order that it may be clearly understood, a few words in regard to the behavior of bacteria under cultivation are necessary.

As most of us know, the method of growing bacteria is, commonly speaking, by the employment of test-tubes filled for about one-third of their length with nutrient gelatin, or some material more or less favorable for the development of the bacteria under observation. The method of planting the bacteria in the tubes is by means of a platinum wire, sunk in the end of a glass rod, and with one end free. The free end is dipped in the material containing the organism, and then immediately plunged directly through the centre of the nutrient material. The result of such a procedure is a visible line through the centre of the gelatin. If this is kept under observation for a short time, dependent upon that necessary for the development of the colony of bacteria, there is observed a gradual thickening of this line on all sides, and occasionally an elevation above the gelatin; then a further spreading of this colony of bacteria does not go on any more at any time. For a long time it was difficult to explain why this cessation of growth occurs, but the knowledge that has come to us of late years furnishes a perfect explanation of why the colony does not further spread, and also why its vitality is not destroyed. The bacteria take from the nutrient gelatin certain elements necessary for their development. They leave, therefore, the nutrient gelatin in a state of partial chemical decomposition, and these unstable chemical elements come together and form new chemical compounds; all of which occurs directly along the outline of the colony. Among these new chemical compounds have been found during the last few years an entirely new series of alkaloids, of such unstable chemical nature that we are unable, in many cases, to separate them, to analyze them, or to determine their chemical symbols.

The great element in this difficulty lies in the fact that most of these alkaloids are destroyed by a low degree of heat, and, as we know, chemistry depends largely upon an extreme degree of heat for many of its analyses.

Some of these new chemical compounds, however, are not

destroyed by such low degrees of temperature, and it is evidently to this class that this new material belongs; and each variety of bacteria produces in a given nutrient material a special alkaloid (a ptomaine or a toxalbumin) which is inhibitory to its further growth, but does not destroy its vitality. This, it seems, furnishes a very perfect explanation of what Koch's material must be, if the explanation of what goes on within the body after its use is correct; and the same idea is applicable not only in the disease tuberculosis, but there have already been announced researches suggesting the possibility of arresting the progress of other diseases. In the same way the result is said to have been obtained in anthrax, and there is strong hope of similar results in diphtheria, scarlet fever, and tetanus. It appears, therefore, that this material can be nothing else than the ptomaine, or, probably, more correctly, the toxalbumin resulting from the development of the bacillus of tuberculosis in some medium which permits of its being separated out of the nutrient material after the bacilli of tuberculosis have produced it. Precisely in what nutrient material the organism is grown, or what the exact method of removal is, is not distinctly stated.

As a corollary to what has been said, it follows most emphatically that this treatment is not an inoculation. An inoculation requires the introduction of something vital which will produce its kind,—will reproduce itself, in other words,—but this is distinctly what Koch's material will not do.

The treatment is accomplished by a subcutaneous injection, not by an inoculation. It equally follows that Koch's material has nothing in common with a lymph. It is not a lymph, and, if any one will take the pains to look up the meaning of the word lymph, it will appear very sharply that this material does not accord with the definition there given. The proper term is that already spoken of as having been suggested by Koch himself, "*parataloid*."

It is not exactly known what the derivation of the word is, but it seems to come from analogy with those given to others of the bacterial alkaloids or ptomaines. It should be stated that these ptomaines are the product of bacteriological development, and it should also be distinctly understood that they are not in any way excreta of the bacteria themselves. They are simply a product coming from the nutrient material left behind, after the

bacteria have absorbed some of the elements of the original compound of which the material was made up.

The action of parataloid is of two kinds: first, local,—that is, localized at the place where the pathological process is going on, not at the point of injection; and, second, general or systemic. These two reactions have been so fully explained in the clinical papers containing the account of cases treated with the material that a description of them would be out of place here.

The claim that has been put forth by Koch himself has thus far apparently been verified by the clinical observation made,—not the claims made by those ignorant of the action of the material; for no one who knew Koch's ideas ever thought that it was to be a universal panacea against tuberculosis.

The method of action is not a germicidal one, so far as the vitality of the bacilli of tuberculosis is concerned; but there seems to be produced about the tuberculous nodules containing the bacilli a necrosis of the unaffected or the partially affected tissues, resembling very closely Weigert's coagulation necrosis. There is, therefore, built up an apparent wall of material unfavorable for the development of the bacilli of tuberculosis, and their further spreading is by this means prevented.

In cases where the extrusion of the tuberculous material is possible after the coagulation necrosis has occurred, this extrusion is the natural solution of the disposal of this tuberculous material.

In places where this is not possible, one of two things must occur,—either absorption or removal by surgical interference,—and this at once limits very largely the good results that can be hoped for from the application of Koch's material to persons affected with tuberculosis.

During the coming year it is to be hoped that a more exact statement may be made as to the nature and chemical composition of the material of which we have been speaking; but it is not too early now to impress as vigorously as possible that the dangers from its careless or ignorant use are almost innumerable. It is undoubtedly one of the most powerful agents that has ever been employed in therapeutics, and unless perfectly and properly made, properly handled, and used with all the precautions that can be employed, will unquestionably do more harm than good; and, therefore, those who are unfamiliar with its workings and with its



power should be exceedingly cautious in regard to its free employment. It could be almost said, now, that its general use ought never to be attempted and that it never should be used at all excepting by those who are quite familiar with its dangers. That this word of warning should be heeded is too much to hope for; that it is necessary is unquestionable.

This subject of the cure of tuberculosis is one of such vital importance to the community at large, and the introduction of Koch's method marks such an era in the advance of bacteriology, that it has seemed well to give so much space to it.

If the hopes raised by the promise are in any way satisfied, the stride that has been made is something almost incalculable. It means the beginning of a new era in the treatment of disease that will be based more completely upon experimental methods than has ever been the case before.

The application of the same ideas from these broad lines of investigation, as suggested by the results in tuberculosis, is much more a question of time and money than of brains; the latter, competent to carry out investigations intelligently in the direction here indicated, are not unknown to us. What is needed is the establishment of institutions, thoroughly well endowed, which will permit such investigations to be carried on in this country,—institutions as well-equipped and as good as is Koch's, the Pasteur Institute, the new institute at St. Petersburg, and one or two others on the continent of Europe.

Zagari<sup>50</sup><sub>Feb.7</sub> fed dogs with the organs of those who had died of tuberculosis, and found that the bacilli were as virulent as they appeared in the dejecta. This is noteworthy, as the acidity of the gastric juice of dogs is high. Zagari also submitted the bacilli of tuberculosis to the action of the gastric juice outside of the body. After three or four hours' exposure at 38° C. (140° F.) the bacilli possessed their full virulence. After six to eight hours their virulence had diminished; after eighteen to twenty-nine hours it was completely lost.

#### SPECIAL ORGANISMS.

*Typhoid*.—Hildebrandt<sup>54</sup><sub>Dec.1,'89</sub> reports that he found in a seven months' fœtus, from a case of typhoid fever, bacilli of typhoid. He obtained a pure culture of the bacilli from the blood. There was no microscopic evidence of typhoid in the fœtus, except a slight

enlargement of the spleen and a few enlarged follicles in the intestines. The bacilli, cultivated from the fœtus, agreed in their biological characteristics and in their reaction to coloring matters, in all respects, with the bacilli of Eberth. This case adds a fifth to the 4 previous cases of intra-uterine infection with typhoid fever reported by Eberth.

Holz<sup>58</sup><sub>Feb. 18</sub> gives a long series of elaborate conclusions, as the result of experimental researches on a method of observation of the typhoid bacillus which seems to be unsatisfactory by reason of the recent researches of Babes.

Janowski<sup>50</sup><sub>Aug. et seq.</sub> reviews the work done on the typhoid bacillus, and he studies the effect upon this organism of sunlight, various temperatures, and nutrient media. He has not, however, succeeded as yet in finding any diagnostic sign by which this organism can be differentiated.

Kitasato<sup>78</sup><sub>B.7, H.3</sub> gives a chemical diagnostic property of the typhoid bacillus, namely, the negative indol reaction of this bacillus as distinguishing it from other similar bacteria.

Kitasato's method of procedure was as follows: He added to an alkaline peptone-bouillon culture of the bacilli which he wished to examine 1 cubic centimetre (15 minims) of a solution of nitrate of potassium ( $\frac{2}{100}$  part of the nitrate of potassium to 100 parts of water), then a few drops of concentrated sulphuric acid. If indol is present, there appears a rose or deep red color. No color appears in a culture of the typhoid bacilli. Also, an exact chemical examination of the culture failed to show the presence of either indol or skatol. He gives a table of the indol reaction of many bacteria, positive and negative: cholera, Brieger, Deneke, and several bacilli found in water or earth give a strong indol reaction. Typhoid bacilli, many cocci of pus-formation, blue milk, and others give a negative reaction as to indol.

Pfuhl<sup>495</sup><sub>Nos. 9, 10, '88</sub> has found in the water of the Elbe a bacillus which presented the same biological characteristics as the bacillus of typhoid fever, differing from the latter only in that it has no power of motion.

Pfeiffer<sup>58</sup><sub>B.7, H.3</sub> has made an extended study of the vibrio Metschnikoff, a microbe, biologically and morphologically, very similar to the cholera spirillum. He considers that they present some morphological differences, especially as to their appearance



FIG. 3.

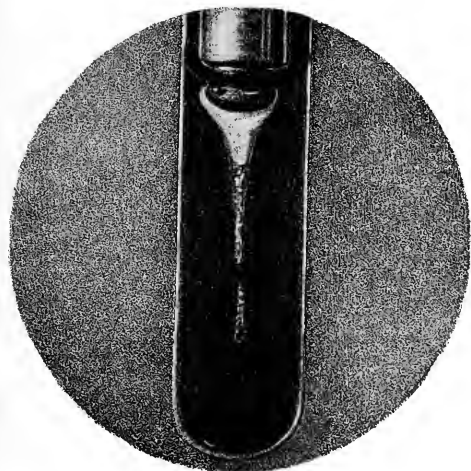


FIG. 4.

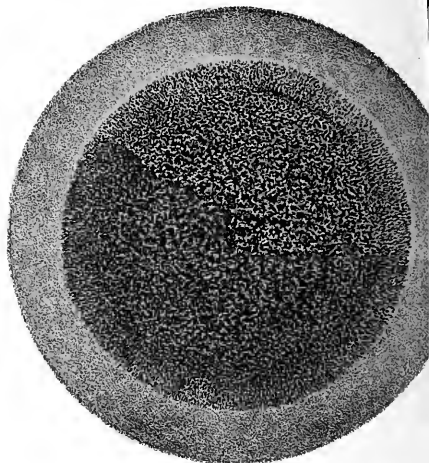


FIG. 5.

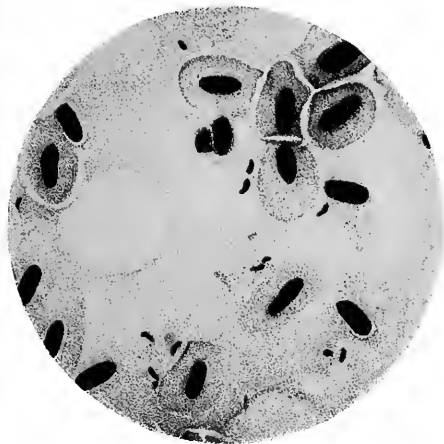
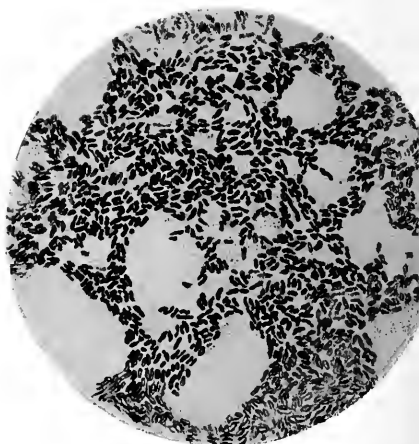


FIG. 6.



Vibrio Metschnikoff (Pfeiffer).  
Zeitschrift für Hygiene.

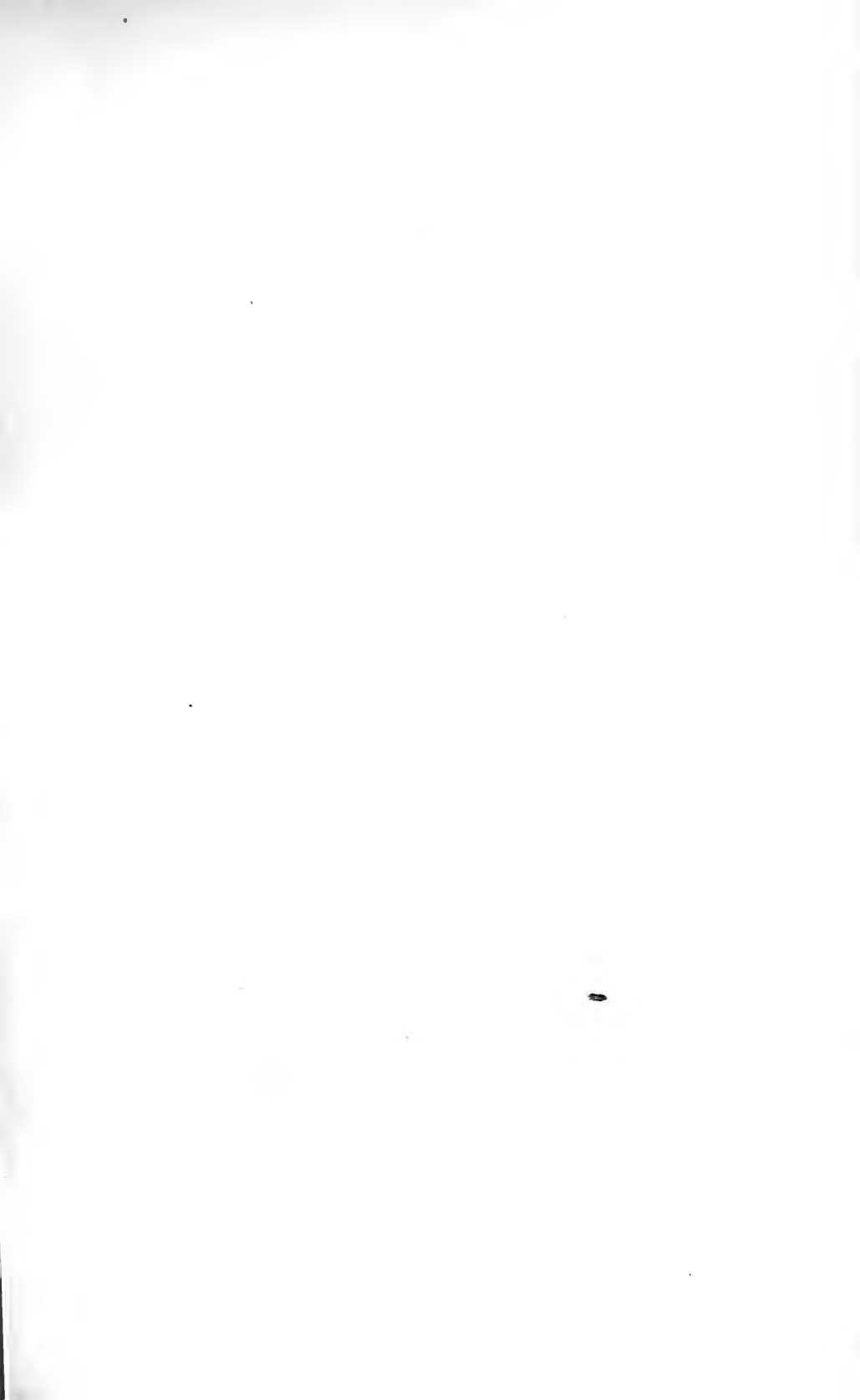


FIG. 1.

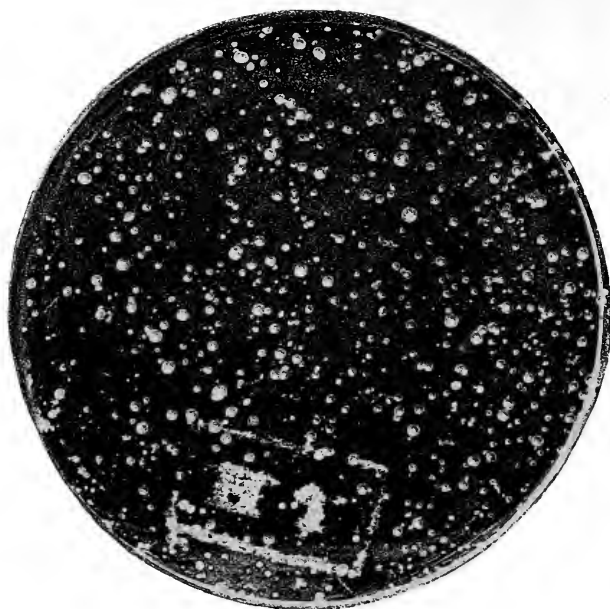
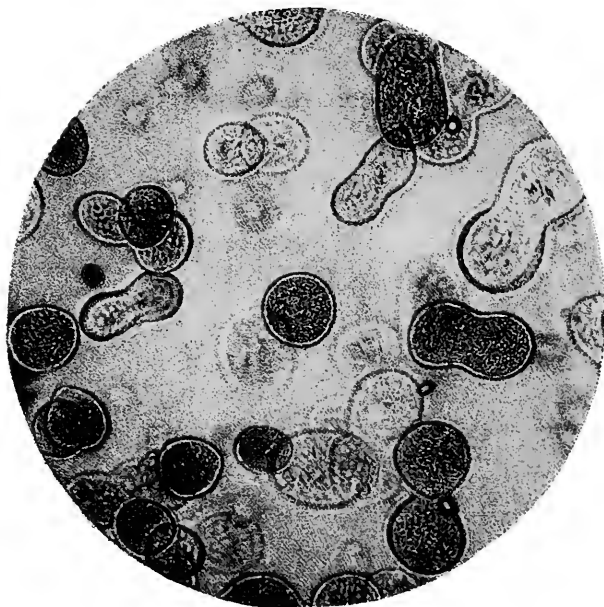


FIG. 2.



Vibrio Metschnikoff (Pfeiffer).  
Zeitschrift für Hygiene.

in gelatin plate culture; and the conclusions that he has drawn, as the result of his work, are as follow: 1. Cholera Asiatica and vibrio Metschnikoff are morphologically similar, but differ in the form of their colonies on gelatin plates. 2. Both species of bacteria give, under similar conditions, the cholera-red reaction; nevertheless, it is easy to distinguish both kinds of organisms, since (3) the vibrio Metschnikoff is extraordinarily pathogenic for pigeons, while the spirillum of cholera possesses almost no virulence for these birds. 4. It is possible to render pigeons and guinea-pigs immune against the vibrio Metschnikoff. 5. An immunity against Cholera Asiatica for animals inoculated with the vibrio Metschnikoff and recovered cannot be established. (See colored plate.)

*Explanation of the Plate.*—Fig. 1. Gelatin plate of vibrio M. exactly 24 hours old, grown at a room temperature of 20° C.; natural size. Fig. 2. Gelatin plate of vibrio M. about 24 hours old; magnified 50 times. Fig. 3. Needle culture of vibrio M. in 10-per-cent. gelatin. Fig. 4. One of the growing colonies magnified 100 times. Fig. 5. The heart-blood of a pigeon dead of vibrio septicæmia. Cover-glass preparation stained with fuchsin. Zeiss apochromatic 2 mm., aperture 1.40. Magnified 1000 times. Fig. 6. Cover-glass preparation of vibrio M. Gelatin plates, fuchsin stain. Zeiss apochromatic 2 mm., aperture 1.40. Magnified 1000 times.

Our corresponding editor Levison, of Copenhagen, sends us an account of the work of Nielsen upon the bacteria found in the water-supply of Copenhagen. This author has made a very careful bacteriological examination of the water-supply of Copenhagen, and succeeded in cultivating fifty-five varieties of bacteria from it; but none of them were identical with the bacteria of typhoid, cholera, etc. All the bacteria cultivated from the water are very exactly described in regard to shape, growth, etc. Four of them are reproduced after photo-micrographs in the original paper. No. 13, that he calls "spirillum aurantiacum," resembles very closely the bacillus of Prior-Finkler. It is only found in the water before filtration. No. 32, the "bacillus pseudo-typhosus," is in most respects similar to the bacillus of typho-abdominalis, and can only be differentiated from this bacillus by the appearance of the culture on potatoes. While the bacillus of typhoid, when inoculated upon sterilized potato, rapidly grows and covers the whole surface with an imperceptible and moist culture, the bacillus pseudo-typhosus will not spread further than the spot where it was first inoculated. When some particles of the gelatin have been transported to the potato by the inoculation, this seems to be able

to carry somewhat further out the growth of the bacillus pseudo-typhosus.

The difference between this innocuous bacillus and the bacillus typho-abdominalis, though constant and important, can readily be overlooked, and it is very probable that some of the authors who seem to have found the bacillus of typhoid fever in potable water have really found but this bacillus pseudo-typhosus.

No. 42, described by Nielsen, is a spirillum, presenting also the so-called "comma" form, and growing in yellow colonies on gelatin.

No. 51 is a large and thick spirillum, also in "comma" shape.

*Anthrax*.—Chauveau <sup>760</sup><sub>Apr. 12, 19</sub> has succeeded in rendering cultures of anthrax absolutely inert by subjecting them to a pressure of three to three and one-half atmospheres of pure oxygen. Cultures so treated were inert, even when injected in large quantities into the most susceptible animals, such as young mice and young guinea-pigs. Animals inoculated with cultures so deprived of virulence were rendered immune to subsequent inoculations with virulent cultures. Chauveau's method was to inoculate with the non-virulent culture at intervals of a week, at first injecting 2 drops and gradually increasing to 3 cubic centimetres (48 minims). Cultures deprived of all virulence could not be rendered virulent according to Pasteur's method of introducing the bacilli, first into the most susceptible animals and then into those less susceptible; but Chauveau obtained the same end by special methods of cultivation. He found that the bacilli recovered their virulence when grown in pure culture media, especially if a little fresh blood was added to the media and if the air was partly exhausted; in other words, a return of virulence was obtained by reversing the process by which the virulence had been diminished.

*Carcinoma*.—Auché <sup>188</sup><sub>May 25</sub> presented a section of a cancer of the breast, whether a primary cancer of the breast or an extension of a case of Paget's disease he was unwilling to assert positively. In the carcinomatous alveoli and in the prolongation of the epidermis Auché found protoplasmic bodies, granular and provided with a nucleus and occasionally with a nucleolus. These bodies, considered by him to be psorosperms, were situated sometimes in the cells and sometimes out of the cells. Auché stated that if this



case was a primary cancer of the breast, as the clinical aspect of it rendered it probable, it was the first case in which psorosperms had been found.

*Rodent Ulcer.*—Dubreuilh<sup>188</sup><sub>May 25</sub> presented to the Society of Anatomy and Physiology sections of a rodent ulcer of the face in which were found coccidia. These bodies were granular, oval, with a double contour. They were found in the cells, and by their presence had pushed aside the cell-nucleus. Dubreuilh obtained the best results by treating the material for examination with osmic acid, collodion, and coloring with Ehrlich's acid hæmatoxylon.

*Psorosperms.*—An editorial<sup>645</sup><sub>Dec. 26, '89</sub> refers to a discussion on psorosperms in the Pathological Society of London, December 17, 1889, and the editor speaks of these bodies as found in Paget's disease, molluscum contagiosum, and in "psorospermose folliculaire végétante."

*Cow-Pox.*—Hervieux<sup>10</sup><sub>May 29</sub> has inoculated a large number of goats with cow-pox and produced vesicles identical in all respects with those which occur in calves. Human beings inoculated with the serum from these vesicles had vaccinia. He concludes that goats may be used for propagating the virus as well as calves. According to Crookshank, it has been known since the time of Jenner that goats were susceptible to vaccinia.

*Protozoa.*—A note<sup>90</sup><sub>Sept.</sub> upon parasitical and pathological protozoa gives a review of various articles, especially that by Sjöbrind. The gist of the article is the emphasizing of the announcement of Koch that it is quite possible that future researches will render it certain that the product of the bacteria, and not the bacteria themselves, are the pathogenic agents in sundry infectious diseases. This makes it worth while to take account of some of the more recent work that has been done in this direction, and the author goes on to speak of the studies upon malaria, typhus, and so on.

The importance of this branch of study of pathogenic micro-organisms can hardly be overestimated. By reason of the recent facts that have been brought to our attention, however, it is necessary to bear in mind that the evidence, upon the whole, points to the presence of pathogenic forms of protozoa, causing malignant growth and pathological processes. But it is one thing to discover such forms and much another to determine absolutely that they really are sporozoa, and that the changes are primarily induced by

the parasite in question. So far no one has discovered any means of recognizing sporozoa outside of the body. They have not been found in all cases of cancer or epithelioma, and many observers are far from being sure that the description given of the epithelial cells containing this organism may not justly apply to any type of cellular degeneration characterized by a granulation disposed within the envelope; yet so many cases have been published in which, besides the simplest forms being found, those containing spores have been seen in the latest growth, that the balance of evidence is in favor of the parasitic nature of these, and it is worth while to record the main statements that have been published up to the present time upon so interesting and important a subject.

An article by Ramsay Wright<sup>39</sup><sub>Jan. 16</sub> is an important one. At the opening of the new biological laboratory in Toronto he spoke of the sporozoa, which he defined as special low forms of animal life, destined to attract the close attention of pathologists for several years. The sporozoa belong to the sub-kingdom Protozoa. They are unicellular, increase by spore formation; are parasitic, and possess no specialized organ of locomotion or of reproduction. Four orders are distinguished, namely, Gregarinidia, Sarcosporidia, Myxosporidia, Microsporidia. For physicians the Gregarinidia present the greatest interest, as to this order belong the coccidia and parasitic organisms recently described in molluscum contagiosum, in Paget's disease, and in "psorosperme folliculaire végétante."

Another important article is that of Pfeiffer,<sup>58</sup><sub>Mar. 2</sub> who describes organisms which are found in the blood of several kinds of birds, also turtles and fishes, which he places in the same class as the plasmodium of malaria. These parasites appear in the red blood-corpuscles, and are short rods or sickle-shaped. The body of the parasite is globular. Pfeiffer considers these parasites as closely related to the organism found in human beings affected with malaria.

*Diphtheria*.—D'Espine and Marignac,<sup>197</sup><sub>Jan.</sub> present an interesting historical and experimental article upon the bacillus of diphtheria. They found the bacillus of Loeffler in all cases of diphtheria. Two of the cases were membranous laryngitis, without any affection of the pharynx. In 2 of the cases which presented the usual clinical symptoms of diphtheria they failed to find

the bacillus of Loeffler. Their method of procedure was to wash a bit of false membrane in distilled water; then triturate it with a 4-per-cent. solution of boracic acid, which does not kill the bacilli of diphtheria; and then to inoculate tubes of blood-serum or glycerin agar,—preferably the former. Colonies of the bacilli of diphtheria grow rapidly, being well marked at the end of twenty-four hours. The bacilli have no power of motion.

Brieger and Fraenkel<sup>209</sup><sub>May 6</sub> have demonstrated the existence of a ptomaine produced by the bacillus of diphtheria, which produced in animals symptoms identical with those resulting from the inoculation of the pure culture of the diphtheria bacillus. This product was obtained by filtering the culture through a clay filter (Chamberland). Heating up to 60° C. (140° F.) destroyed its virulent properties. As this poisonous substance belongs to the class of albumens, Brieger and Fraenkel suggest the name of toxalbumin for this and allied substances obtained from cultures of anthrax, typhoid, and tetanus, in distinction from the toxines, which have a different chemical reaction.

*Distemper in Dogs.*—Everett Millais<sup>2</sup><sub>Apr. 12</sub> has made a bacteriological study of this disease, which is very common in England and very fatal to well-bred dogs. Many contract the disease at the shows and spread it when they return to their kennels. One attack produces immunity to others. Its chief symptoms are dullness, loss of appetite, nasal discharge, and diarrhœa, and frequently pneumonia and bronchitis are present as complications. Millais obtained from the nasal secretion, in a case of distemper, a mixed culture of two bacilli and one micrococcus. Animals inoculated with this culture had the disease. The three microbes were obtained in pure culture. The micrococcus and bacillus A. produced no effect when animals were inoculated with the pure culture. The pure culture of bacillus B. produced distemper in dogs. This bacillus contained spores, as shown in a photograph. The bacillus liquefies the gelatin, descending as a flaky mass in the almost clear fluid, which is covered by a whitish scum. No mention is made of its manner of growth in other nutrient mediums. Millais heated a pure culture of the bacillus B. at 60° C. (140° F.) for one minute, and injected 5 cubic centimetres (1 $\frac{2}{5}$  fluidrachms) of this culture into puppies. Puppies so treated were protected from inoculation with the pure culture of bacillus B.

The puppies, though immune to inoculation with this bacillus, were not protected against the disease from contact with violent cases. Millais considers the bacillus B. to be the cause of the distemper.

*Hog-Cholera*.—Much has been said in regard to hog-cholera; but little that is definite has been yet reached. Novy<sup>9 Sept.6</sup> discusses the toxic product of the bacillus. Schweinitz<sup>9 Sept.6</sup> gives a preliminary account of the ptomaine from the culture liquids of the bacilli of hog-cholera.

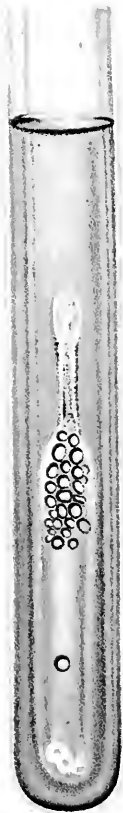
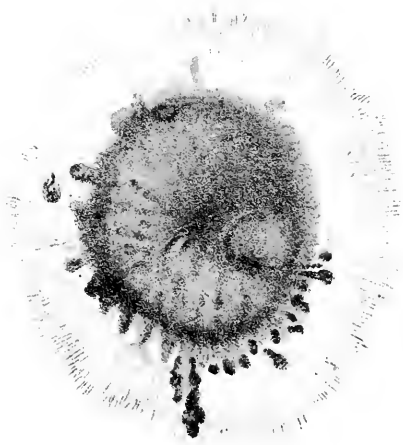
Raccuglia<sup>50 Aug.29</sup> comes to the conclusion that the American swine plague (hog-cholera) and the German schweineseuche are not identical, as they differ in microscopic appearances and in vital reaction. Much more work is necessary before the exact relation of the organisms producing similar diseases to each other can be definitely made out.

*Malaria*.—Osler<sup>39 Jan.16</sup> speaks of plasmodium malariae as closely resembling a sporozoa, and Laveran<sup>55 July 6</sup> reviews elaborately all work done upon malaria, bringing our knowledge of this disease up to date.

*Marasmus*.—Mandry<sup>54 Mar.16</sup> describes a capsulated bacillus, found in the trachea of a paralytic, who died of marasmus. This bacillus was, in its morphological and biological characteristics, identical with the pneumonia bacillus of Friedländer. It differed, however, in its pathogenic properties in that it produced the symptoms of an intense septicæmia in white mice, and occasionally in rabbits, whereas doves were refractory to the microbes. He doubts whether a microbe of the same biological and morphological characteristics can be differentiated by its pathogenic properties. He considers this bacterium as probably a more virulent variety of the bacillus of Friedländer.

*Meningitis*.—Meningitis of bacterial origin (Adenat<sup>1092</sup>) and an essay on "Infectious Endocarditis," by Lyon,<sup>55 June 7</sup> are reviewed in a very complete way. Most of these diseases may be associated with, and are probably dependent upon, a large number of bacteria. A clinical differential diagnosis is impossible. A part of the organisms mentioned are the pneumonia bacillus of Friedländer, the pneumonia bacillus of Fraenkel, the streptococcus pyogenes and the staphylococcus pyogenes aureus, the bacillus of tuberculosis, the typhoid bacillus, and many others. Special emphasis should be given to the fact that in studying the etiology of infec-





Rauschbrand Bacillus (Kitasato).  
Zeitschrift für Hygiene.

tious diseases we must differentiate those which present precisely the same clinical symptoms, in accordance with the exact specific virus or micro-organism concerned in the production of the special disease under observation at the time. This is a point which is not sufficiently emphasized in the work of the physician to-day; but it is one which is brought more and more to the front by experimental work in bacteriological laboratories.

*Red Milk.*—Menge<sup>50</sup><sub>Nov. 15, '89</sub> describes a red sarcina which causes a red color in milk. This organism liquefies gelatin slowly, grows on agar and luxuriantly on alkaline potatoes. Many microbes cause a red color in milk, namely, the bacillus prodigiosus, the bacterium lactis, erythrogenes of Hueppe, pink yeast, and several other bacteria.

*Pneumonia.*—Welch<sup>764</sup><sub>July</sub> reports the results of the bacteriological examination of cases of croupous pneumonia, and gives the comparative results and morphological appearances of the organisms found in these cases and of others that have been described as occurring in cases similar from a clinical point of view. An accurate comparison of these different organisms is given.

*Rauschbrand.*—Kitasato<sup>58</sup><sub>Feb. 18</sub> has published an article as a sequel to his former paper upon the method of development of the Rauschbrand bacillus in nutrient media. The plates accompanying his work are reproduced. He describes their behavior under cultivation, their retention of their virulence in solid nutrient media, the cultivation of the colony, and the fact that they develop best at from 36° to 38° C. (96.8° to 100.4° F.), and the plate is an illustration of the method of development.

*Explanation of the Plate.*—Fig. 1. Colony of the Rauschbrand bacillus in nutrient gelatin, 8 days old, at a room temperature of from 18° to 20° C. Fig. 2. Needle culture of the Rauschbrand bacillus in nutrient gelatin, at a room temperature of from 18° to 20° C. Fig. 3. Rauschbrand bacillus from a gelatin culture; rods free of spores. Fig. 4. Rauschbrand bacillus from an agar culture; rods producing spores.

*Tetanus.*—Bossano and Steullet<sup>46</sup><sub>Dec. 30, '89</sub> report 2 cases of tetanus, one in a man and one in a horse, from which cultures of the tetanus bacillus were made and successfully inoculated into guinea-pigs. The man was a gardener, who cut his hand while it was covered with dirt. Tetanus developed in a few days, and death followed on the second day after the onset of the symptoms. Two blood-serum tubes were inoculated with pus from his hand and

placed in an oven for a week. The cultures were then submitted to a temperature of  $100^{\circ}$  C. ( $212^{\circ}$  F.) for five minutes and put back into the breeding oven. A week later there was found a fine culture of the tetanus bacillus, and the guinea-pigs inoculated from the culture died, in four days, of tetanus. The horse stepped on a nail in the street, had tetanus two days later, and died in twenty-four hours. The wounds were bathed at once in turpentine; cultures in liquid blood-serum and agar were obtained, and were found virulent two months later. The stall in which the animal stood was washed with a 5-per-cent. solution of carbolic acid and spread thickly with chloride of lime. A month later guinea-pigs were inoculated with dirt from this stall and died. The authors draw especial attention to the great resistance of the bacilli of tetanus to the methods of disinfection used.

*Immunity.*—Enormous amounts have been written on this subject during the past year. Some of the more important articles are those by Buchner, <sup>319</sup><sub>No.30,'83; V.5,p.25; V.6,p.21</sub> Charriin and Roger, <sup>50</sup><sub>No.37,'89</sub>, <sup>1012</sup><sub>No.37,'89</sub> all of great importance in the introduction to the study of the subject of immunity.

Leo <sup>58</sup><sub>B.7,H.3</sub> says that the immunity of certain animals from certain diseases is dependent upon differences in the quality of the blood itself, rather than upon phagocytosis,—a theory suggested, but never proved. He draws attention to the fact that persons suffering from diabetes are especially liable to tuberculosis and all forms of suppurative diseases. In his experimental work on this clinical observation, he gave phloridzin,—a drug capable of producing mellituria, according to von Mering, in animals. Most of his experiments failed, as the phloridzin itself killed the animals; but he found that white mice, otherwise immune to glanders, could be successfully inoculated with glanders after feeding with phloridzin.

Kritzmann <sup>164</sup><sub>Sept.18 et seq.</sub> reviews the various theories which have been advanced at various times in regard to immunity.

A number of articles are quoted at length, and the conclusions of the author are that phagocytosis is only a cellular defensive process; that the accumulation of leucocytes around the microbes, which are surrounded like a mantle, equally plays a marked rôle in the process. It is in this way that spores injected into the anterior chamber of the eye develop less rapidly when they find them-



selves at the border of the iris, which is one of the principal sources of the leucocytes. The thicker the mantle of leucocytes surrounding the microbes, the less is the rapidity of the development of the latter; and in this way is easily explained how, by the production of a nodule of pus about the point of inoculation of the bacilli of anthrax, one can arrest the development of the organism.

*Blood.*—Charrin and Roger<sup>152</sup><sub>Nov. 28, '89</sub> have made some experiments on the action of the blood-serum of diseased or inoculated animals upon pathogenic microbes. The only experiments published are those with the bacilli of blue pus, an organism chosen because Buchner found it to be the most resistant to the antiseptic action of the blood-serum.

Their method of procedure, in all cases, was to draw the blood from the carotids into sterilized flasks, and to draw off the serum after the blood had stood for forty-eight hours on the ice. Serum from healthy rabbits and from rabbits which had been inoculated with the pure culture of the bacillus of blue pus was obtained in this way. They then inoculated healthy serum and the serum from diseased animals, with small amounts of a pure culture of the bacillus of blue pus.

In the first instance there was an abundant growth of bacilli; in the second instance the growth was scanty, and, moreover, the bacilli had lost entirely, or to a marked degree, their properties of coloring the media in which they were grown. (Buchner's experiments in the ANNUAL, for 1890, Section L, page 40.)

Prudden,<sup>59</sup><sub>Jan. 25</sub> speaking of the germicidal action of blood-serum and other body fluids, says: "The very occurrence of self-limited diseases, such as typhoid fever, acute lobar pneumonia, etc., strongly suggests, if it does not prove, the existence in the body of some sort of bacteria-destroying agency." But a long period of animal experiments has definitely proven that a very considerable number of pathogenic micro-organisms may be introduced into the body, to entirely disappear in a short time. To account for this phenomenon, the theory of phagocytosis of Metschnikoff has been upheld; but the doctrine of phagocytosis, at least in the scope which has been claimed for it, appears to most unprejudiced observers less and less to commend itself the more the facts and observations on which it is based are critically examined and judicially observed.

Recent experiments by Nuttall<sup>58</sup><sub>B.4,p.353</sub> show that though dead bacteria are found in cells, as claimed by the theory of Metschnikoff, they are also found outside of the cells in blood-serum. These observations lead directly to the conjecture that there is some agent in the fluid constituents of the blood which destroys the germ. Freezing twice and a prolonged temperature of 55° C. (131° F.) destroy the antiseptic action of the blood.

Prudden found by experiments that fresh ascitic and fresh hydrocele fluids have the power of destroying typhoid bacilli, but not streptococcus pyogenes aureus. Heating ascitic fluid to 60° C. (140° F.) for one hour destroys its antiseptic action.

He gives the following table among several, showing the result of his experiments on the effect of fresh ascitic and hydrocele fluids on the typhoid bacillus:—

EXPERIMENTS ON THE EFFECTS OF FRESH ASCITIC AND HYDROCELE FLUIDS ON THE TYPHOID BACILLUS.

NO. OF EXPERIMENT.		ASCITIC FLUID.		HYDROCELE FLUID.				
		I.	II.	I.	II.	III.	IV.*	V.†
No. of bacilli planted,	0	5764	13725	200	2360	1620	1280	2880
	1	...	...	31	7	11	187	...
	2	305	4666	23	...	...	...	2010
	3	683	...	...	5	10	208	...
Hours of exposure of the bacilli to the fluid,	4	...	2755	...	...	...	...	2839
	5	...	...	...	14	5	166	...
	7	127	...	...	...	...	...	...
	19	...	975	...	...	...	...	2100
	24	107	...	0	16	4	8	2253

\* Five days old. † Heated one hour to 60°.

Fodor<sup>57</sup><sub>Mar.30,'90</sub> has made a new series of experiments as to the power of blood to destroy anthrax bacilli. He found that more bacilli are killed in defibrinated arterial blood than in defibrinated venous blood, more in fresh blood than in blood that has stood for some time. Freezing once does not affect the antiseptic action of the blood; freezing three times and heating for fifteen minutes at 50° C. (122° F.) destroy the antiseptic action of the blood. This action is most marked between 38° and 40° C. (100.4° and 104° F.), and less at 42° C. (107.6° F.).

Fodor found that injecting into the stomach of animals a considerable quantity of acid reduced the antiseptic properties of their blood, whereas the injection of sufficient quantities of alkali into

the stomach increased this antiseptic action. Further, Fodor injected large quantities of bicarbonate of soda into the stomachs of rabbits and then inoculated them with anthrax bacilli. All the control animals died of anthrax, while of 19 previously given bicarbonate of soda only 3 died of anthrax.

*Bacterial Poisoning from Medicine.*—Campbell<sup>237</sup><sub>Mar.</sub> suggests the idea that the unusual symptoms produced by medicines, usually simple in their action, may be due to the presence of bacteria in the medicine, rather than to any idiosyncrasy in the patient using it. He gives the history of a patient who was made violently ill by using a mixture of quinine and whisky which had been kept for a month. Chemical analysis showed that the mixture contained quinine, that the alcohol was of the average strength commonly employed, and no other chemical ingredient was found. Microscopic examination of a dark, slimy sediment, which was present, showed that it was largely composed of bacteria. Campbell calls attention to the fact that bacteria may grow in most medicines.

*Chemical Properties.*—Petruschky,<sup>50</sup><sub>B.6, No. 23</sub> in view of the great importance of the chemical properties of various bacteria, made a series of experiments to analyze the more simple chemical properties possessed by certain of them. Naturally he investigated the nutrient material in which various bacteria had grown, and found that some had produced acidity, others an alkalinity of the nutrient media.

His method of procedure was as follows: He used sterilized milk-whey as a culture medium. After having precipitated the casein by boiling and acidifying with hydrochloric acid he added to the whey a sterilized solution of lakmus, pale violet in color, so prepared that a slight addition of an alkali produced a blue color, or of an acid a red color. The preparation of the solution of lakmus, used according to Petruschky, is a long and complicated process.

Typhoid bacilli, Emmerich's bacilli, lactic-acid bacilli, growing in this media, colored the fluid red, showing the production of an acid; while the bacilli of swine-erysipelas, of blue milk, and the red yeast caused a blue reaction, showing the production of an alkali.

*Cemeteries and Decomposition.*—Esmarch<sup>58</sup><sub>B.7, H.1</sub> has studied the destructive action of decomposition on various pathogenic bacteria

with a view of determining how far cemeteries were dangerous to public health. To this end bodies were buried, left in the open air, or placed in water. Bacilli of mouse-septicaemia were found alive after ninety days. Anthrax bacilli, without spore formation, were rapidly killed, and especially if buried. Bacilli of tuberculosis were found virulent after two hundred and four and two hundred and fifty-two days. Tetanus bacilli after thirty-five days were dead. Cholera bacilli were virulent up to the seventh day. Typhoid-fever bacilli, in one experiment, were virulent up to the third day. Esmarch concluded from all his experiments that, in general, pathogenic microbes do not retain their vitality long in dead bodies. The more active the decomposition is, the sooner they die. He considered that the air or water from a cemetery was not dangerous.

*Aseptic Suppuration.*—Lemaire,<sup>220</sup><sub>June 13</sub> under the title of “Aseptic Suppuration in Rabbits,” gives a series of experiments showing that the introduction of sterilized mercury under the skin of rabbits gives rise not only to an inflammatory infiltration, but to the formation of pus. He expresses the opinion that the action of mercury is probably due to some chemical reaction of the mercury on the tissues of the body. He suggests that suppuration may be due to necrosis, attendant upon the withdrawal of the oxygen during the oxidation of the mercury, or to some new mercurial compound formed which is poisonous, or to the withdrawal of some chemical substance other than oxygen to form an acid salt of mercury.

He draws the following conclusions, namely: 1. That mercury possesses pyogenic properties, and produces aseptic suppuration when introduced into normal subcutaneous cellular tissue. 2. This suppuration is apparently due to a chemical reaction induced by the mercurial compound, the results of the reaction of the organic liquid upon the mercury. 3. This pyogenic action is apparently found in all the warm-blooded animals usually employed in laboratory experiments; for example, the dog, the cat, the rabbit, the rat, and the guinea-pig. 4. This action differs in accordance with the difference in the inflammatory reaction of the animal, being rapid in the dog and the cat, slow in the other animals mentioned. 5. When the quantity of the mercury is not sufficient to prolong for a long time this action in those animals which react quickly, and thus to lead to a destruction of the skin and over-

distension of the abdomen, or when the action is slow, whenever the amount of the mercury is not sufficient to poison the animal, complete healing can occur by simple absorption of the abscess. 6. These suppurations never become general nor produce metastatic abscesses in the viscera, but they may produce rare metastatic abscesses in the cellular tissue through the medium of the lymphatics.

*Phagocytosis*.—Bouchard <sup>113</sup><sub>Aug.24</sub> holds the theory that under normal conditions phagocytosis prevents the bacteria usually present in the lungs, intestines, etc., from entering the blood-current, and thereby exerting a pathogenic influence. In support of his theory, he claims that influences which reduce the general health may destroy this property of the cells to remove bacteria, and so an organism which, under the usual condition is harmless, enters the circulation and becomes an agent in the production of pathological processes. Experiments upon the guinea-pig, exposed to cold, showed a large number of bacteria in the blood.

Bouchard holds the opinion that both phagocytosis and the antiseptic action of the blood must be present to explain immunity to disease in animals. The same author <sup>363</sup><sub>July</sub> <sup>61</sup><sub>Aug.30</sub> gives some interesting experiments in regard to the growth of bacteria in animals usually immune to those bacteria. He says that rabbits, which are usually immune to anthrax, are infected, if at the same time the non-pathogenic bacillus prodigiosus is injected. This may probably be explained in that the growth of the bacillus prodigiosus produces just that quality necessary for the growth of the anthrax bacilli which was wanting in the body of the rabbit.

Metschnikoff <sup>800</sup><sub>July 30</sub> has published a paper under the title of "New Researches on Phagocytosis," in which, on theoretical grounds, he explains the various methods by which the bacteria are removed from the body. He divides phagocytes accurately as macrophages and microphages, and discusses the fate of the bacteria after they have been eaten up by the phagocytes. He offers no experiments in support of the theory expressed as to the facts in the case.

*Microbes in the Stomach*.—Kurrhoff and Wagner <sup>50</sup><sub>Mar.25</sub> found that in normal gastric juice there were only a few microbes to be discovered,—from none at all to twenty-six organisms in 1 cubic centimetre; and, further, that these microbes were destroyed in a short time. The authors drew the following conclusions: 1. There are no microbes as habitual parasites in the stomach. Such as do get

into the stomach are soon destroyed, and have no influence on digestion. 2. The gastric juice is a powerful destroyer of pathogenic germs. 3. When the gastric juice is normal, only such microbes as contain spores retain their vitality, such as those of tuberculosis and anthrax, while others are destroyed in half an hour.

*Diarrhœa*.—Victor C. Vaughan<sup>9</sup><sub>Aug.16</sub> reports that he has isolated poisonous substances from cultures obtained from the stools of infants suffering from diarrhœa. The substances were all different chemically, but similar in physiological action. All produced vomiting, purging, collapse, and death in young animals. He prefers the name *toxicogenic* for microbes producing such poisonous substances.

#### METHODS.

Sternberg<sup>9</sup><sub>Sept.13</sub> speaks of cocoanut-water, as derived from fresh green cocoanuts, as a favorable nutrient material for many forms of bacteria. He has tried it in Havana, and has had several of the nuts sent to him in Baltimore, with success in both places. He recommends it very highly as an easily-prepared form of nutrient material in the climate where this nut is obtainable.

V. A. Moore, an assistant in the laboratory of the Bureau of Animal Industry in Washington,<sup>107</sup><sub>Oct.16</sub> says that the easiest modification for the preparation of nutrient agar-agar consists in the addition of the white of an egg to about 250 cubic centimetres (8 $\frac{3}{4}$  ounces) of the meat infusion, with vigorous boiling, in order to get rid of the cloudiness and turbidity which usually forms in agar tubes. He claims that this will produce an extremely clear, smooth, nutrient material with this addition.

Abbott<sup>764</sup><sub>May</sub> speaks of milk as a nutrient medium for the bacilli of tuberculosis. It should be solidified with from 1 to 3 per cent. of agar-agar, then sterilized by fractional sterilization in the usual way, and is said to be an extremely favorable medium for the growth of this organism.

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